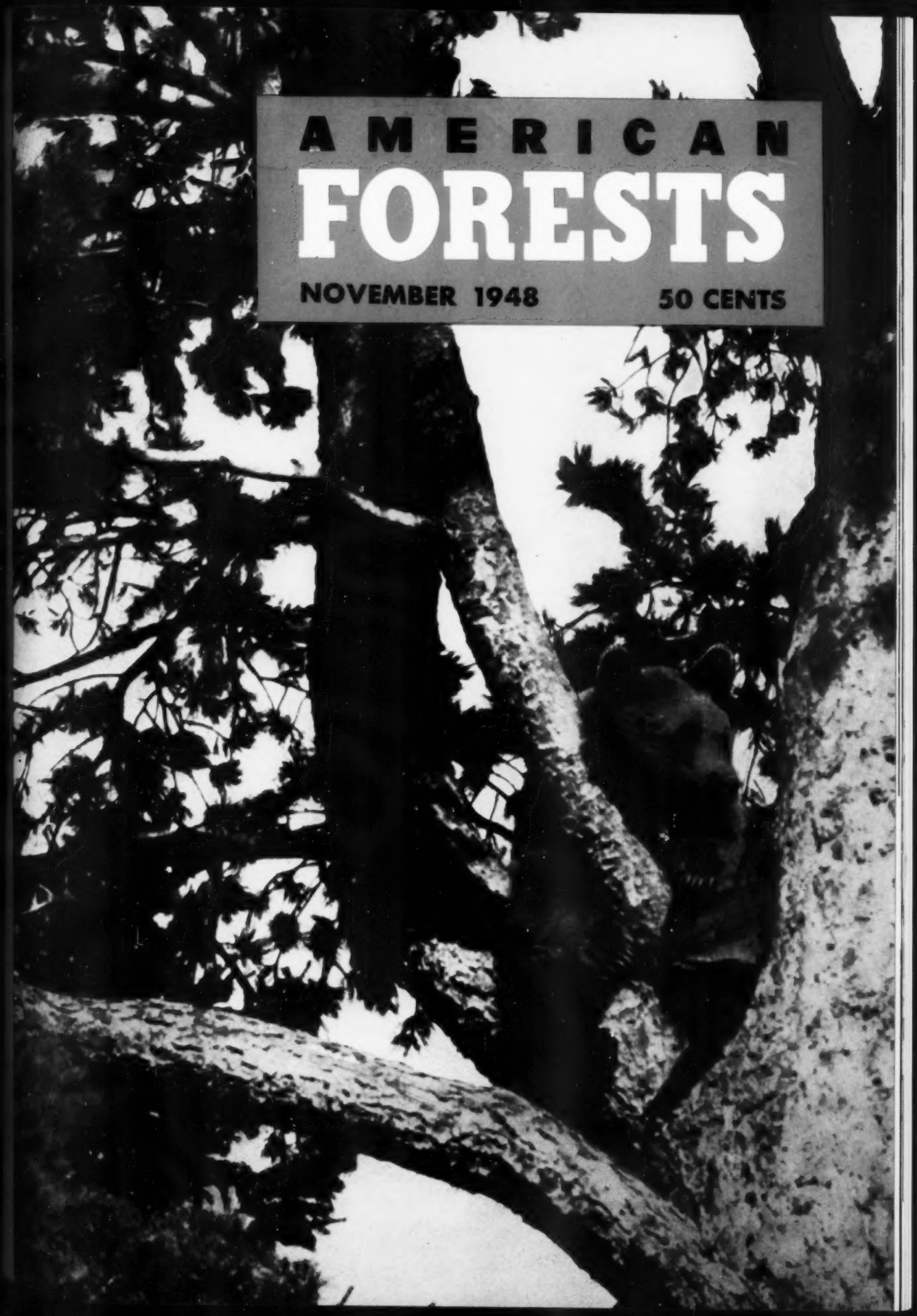
AMERICAN
FORESTS
NOVEMBER 1948
50 CENTS

Good Service Depends on Good Earnings

There is still much to be done to make the Bell System big enough for the nation's needs. It will take a lot of money.

This money cannot come out of the rates you pay for service. It must come from investors.

They are the hundreds of thousands of everyday people in all walks of life whose confidence in the integrity and earning-power of the Bell System encourages them to invest their savings in the business.

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Earnings that are too low are not in the best interests of anybody and can only result in the long run in deterioration of a vital service.

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It asks only what most people and most regulatory bodies agree is fair and just . . . a reasonable return to the many men and women all over America whose savings have built the telephone business.

BELL TELEPHONE SYSTEM

AMERICAN FORESTS

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COVER
"Observation Post"
Photograph by National Park Service
Department of the Interior

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Wild Ducks in Indiana
Photograph by Frank Wallace

LETTERS TO THE EDITOR

We Shouldn't Cut the Bee Trees

SIR: Mr. Botsford's article, "Honey Hunting," in AMERICAN FORESTS for October deals with a subject which, like most others, has a side that needs presentation—that is, the cross-pollinating services of wild bees.

The U. S. Department of Agriculture points out that legume seed production per acre in the United States has declined markedly in the past twenty years despite greatly increased acreages planted to such crops. A large part of the yield reduction is attributed to the decimation of native wild bees — sweat bees, carpenter bees, bumble bees, and leaf-cutting bees. Heavy grazing, the tillage of extensive acreages, the burning of hedgerows, woodlands, and odd spots, have destroyed the homes of those useful insects. Cross-pollination now depends to a great extent upon honeybees—tame and wild.

A bee-tree probably is worth many dollars per year to the grower of fruits, legumes, melons, certain vegetables, cotton and many other crops. Hives of bees commonly rent for $2 to $5 each for pollinating purposes. I have records of Hubam clover increase through the use of a hive of bees per acre that has resulted in a gross increase in the value of seed produced amounting to $44.20 per acre.

I don't know what a bee-tree is worth to a farmer, but it would take a lot of low-grade wild honey to be worth even the minimum hive rental figure to me if I were raising crops that require cross-pollination.

Cutting bee-trees may be a good means of controlling bee diseases. It's fun—done it myself! But if I were a farmer Mr. Botsford would not cut *my* bee-tree.—*Philip F. Allan*, Fort Worth, Texas.

Longer Life for Wood

SIR: I read AMERICAN FORESTS with interest every month, noting the many suggestions made to maintain and improve the forests of the country. However, I feel that you could well take a broader view by including in your magazine articles covering methods of securing greater life from wood products of all kinds.

Procurement of longer life from all wood now in use is of the greatest concern to all citizens. The time has passed when it is only important to efficiently use the wood from each standing tree newly cut. Although hard to prove, it is probable that as much timber is cut each year to replace wood now in use as to build new structures or devices. On this basis a fifty percent increase in useful life of wood now in use would mean a twenty-five percent reduction in timber cut each year. Could a simpler way be found to increase our stock pile of this strategic material?

Why not make timber products now in use last longer? Also those being newly installed?—*C. E. Howell*, New York City.

How Large Is Your Grapevine?

SIR: It is not a long step from a keen interest in trees to interest in other growing vegetation. I have been much interested for a number of years in a large grapevine of the wild woodland variety, often called the opossum grape, growing in a deep loamy hollow on our ancestral estate. Four and a half feet above the ground the vine is twenty-eight inches in circumference — thirty-two and a half inches at four inches above the ground. I do not know of another vine of this kind anywhere near as large — and would appreciate knowing how large wild grapevines grow. —*James Hutchins, Windom*, North Carolina.

Plea for "Weeds"

SIR: Although it is not specifically mentioned, I assume your program includes the conservation not only of forests, but of other essential vegetation such as plants that grow wild on uncultivated lands, along roadsides, even on vacant city lots. "Weeds," we thoughtlessly and erroneously call most plant life. And, due in large measure to the high pressure advertising of those who manufacture mechanical, chemical, and other weed eradicators, the very term "weed" condemns to death any plant to which it is applied. Many of these plants are not only beautiful, even when not blooming, but are prolific sources of nectar for our honeybees and other vitally essential insect pollinators.

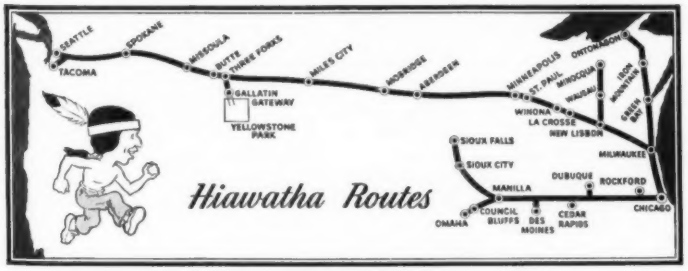
I am bitterly opposed to the so-called chemical fertilizers, which destroy or drive away our equally essential earthworm population, and kill off the micorrhizal soil bacteria which are the connecting links be-

New Hiawathas are rollin'!

SIXTEEN Milwaukee Road Hiawathas are now rolling up nine thousand miles a day of superb service in ten midwestern and northwestern states. Velvety smooth and silent, these orange-maroon-and-silver flyers are as delightful to look at as they are to ride in—close to perfection for day or night rail travel.

With a huge fleet of new cars, the great majority of them built in its own shops, The Milwaukee Road has put new Hiawathas on the road—re-equipped existing Hiawathas—improved many other through trains.

Hiawatha-land is shown on the map below. Anywhere you go in this broad area, you can treat yourself to a zestful, restful ride on a Milwaukee Road Speedliner. H. Sengstacken, Passenger Traffic Manager, 708 Union Station, Chicago 6, Illinois.



THE *Milwaukee* ROAD

Speedway of the Speedliners

tween the mineral and chemical elements found in the soil and the plants which we humans raise as food and as animal foodstuffs.

And I am no less vehemently opposed to chemical insecticides, because every rain will wash them off the plants into the soil—and soon a lethal concentration of arsenic, or lead, or sulphur, etc., is built up in the topsoil, that effectively sterilizes it and for years to come makes it unfit for use. Even so-called weeds can no longer grow in such soil.

Hence the soil erodes rapidly, and every square foot of such erosion that is added to our already huge area of useless land brings us just that much closer to a "have-not" status.

Moreover, every type of so-called "weed" is of different chemical composition, either in the actual chemicals involved or in the proportions thereof. Therefore, the roots of each and every "weed" bring up from the, as yet, unexhausted subsoil these vitally needed chemical elements, in an organically usable form. Then, when the weed dies, its remains enrich the topsoil.

Few of our annual food-crops are deep-rooted. Most of their sustenance is taken from these few inches of topsoil. So, as I see it, it is a criminal offense against the welfare of nature, including ourselves and our animals, to exterminate all "weeds" as speedily as possible.

No, I do not believe our gardens and fields should be allowed to become over-run with weeds. We must remove them from certain areas to make room for crops. But when removed, and with an exception or two, they should *never* be burned.

I hope your program includes heavy emphasis on plant conservation, other than trees—on *all* related types of conservation.—*E. V. Oliver*, Sepulveda, California.

CIGARETTE-PROOF FURNITURE

Try this with a friend's handkerchief if you have doubts—but it will show you the simple principle on which one of the latest developments in wood utilization is based. Take a half dollar and stretch the handkerchief tightly over it. Then while your heart skips a beat, place a lighted cigarette against the handkerchief at the point where it is in contact with the metal of the coin. Grind the cigarette out. Smash it down and rub it in. And what happens? Nothing.

Now try the trick without the half dollar. But this time be sure to use a handkerchief you are ready to discard, for the result will be a hole burned in the cloth.

The new cigarette-proof table top is based on the same principle of heat conduction as the one you have just demonstrated with the handkerchief and the half dollar. Of course, the Timber Engineering Company's research laboratory in Washington, D. C., doesn't use handkerchiefs and half dollars. Its method, now adapted to commercial production, is to insert a thin sheet of aluminum between a furniture core and the face veneer of the table top. The aluminum, acting just like the half dollar did in your experiment, conducts the heat away from the veneer so rapidly that no damage results to the wood surface, provided the surface itself is given a heat-resistant treatment.

The principle has been known for a long time, but the process of binding the aluminum to the veneer on the one side and the furniture core-stock on the other presented real problems. In the past a hot-bonding adhesive was necessary, but because of inability to control the differences in expansion and contraction of wood and metal, the aluminum would be bonded to the wood in a heat-expanded condition. When the assembly cooled off, the expanded aluminum would shrink while the wood retained about the same dimensions with little shrinkage. Internal stresses would be set up which eventually would result in warping of the panel and checking of the face veneers.

The new process makes use of a new type of gluing technique—the thin sheet of specially prepared aluminum is attached to the core and face veneer by a cold adhesive.

The laboratory has also perfected a varnish for the face veneer which is highly resistant to the heat of burning cigarettes, water stains, alcohol, and stains from lotions and cosmetics.

With the new table or desk top, Dad and his card playing friends now can concentrate on the business at hand without worrying about that "morning after" complaint—"Now, just look what you did to my table." And if Jane spills some of her nail polish on the dressing table, it will wipe away without a single mark. Mother's literary group may spill tea on the serving table and know that she means it when she says, "Don't worry, it won't leave a mark."

Editorial

Senator Arthur Capper — Conservationist

Statesmen, as a rule, lead a thankless existence. Their every act is suspect. Too often minor efforts are magnified while major accomplishments pass unnoticed. With rare exceptions, it is only when historians, years later, appraise a statesman's efforts and accomplishments that he is given, belatedly, the recognition he deserves.

In presenting its Conservation Award to Senator Arthur Capper of Kansas, at its 67th annual meeting last month, The American Forestry Association endeavored to write current history, to bring before the people today what a man of today has achieved and is achieving in the broad field of natural and human resource conservation.

Senator Capper was not chosen from a field of contenders for this honor. There were no contenders. For in his thirty years as United States Senator, in the four years he served as governor of Kansas, and as one of the country's outstanding publishers, Arthur Capper has built up a record of conservation accomplishment that stands alone.

Presented elsewhere in this issue (see page 501), this record of unselfish public service is a forthright challenge to legislators and other public officials across the nation. For the responsibility of furthering sound land management policies and practices is as great today as it was when the distinguished statesman from Kansas first blazed the trail three decades ago. And with the world natural resource picture clouded by social and economic uncertainties, the need for statesmanship is even more acute.

Senator Capper's great interest is in the needs of the land—and the people who live on the land. And—this is something for aspiring statesmen to ponder—he has vigorously supported sound conservation measures regardless of party lines. This is not always easy, particularly when national issues are at stake. But the statesman from Kansas has never looked for the easy way. His search has been for the *right* way.

Opportunity for the 81st Congress

Coming on top of President Truman's persistent criticism during his campaign of the Republican-controlled 80th Congress, the surprising victory of the Democratic party in the November election suggests that better days are ahead, legislatively speaking. If, as political observers now say, the return of the Democrats to full power was propelled by what Candidate Truman termed the "do-nothing record" of the 80th Congress, this country should see more positive action when the new Congress convenes in January.

Certainly there is no dearth of problems to be tackled. And high on the list are those involved in getting our natural resource house in order, with special attention to forest producing lands.

For example, around 120 million acres, or a fifth of our forest area, are still unprotected from fire. We still lack funds to implement legislation for cooperative protection against forest-destroying pests. Only a fraction—less than ten percent—of the four million owners of small forest properties, controlling more than half of our commercial forest land, operate their woodlands on a sound forestry basis. Tree planting to restore to productivity more than 100 million acres proceeds at a snail's pace — better than a 300-year job at the present rate of planting.

We know what to do about these and other problems. The basic blueprint for action is already at hand in the Program for American Forestry drawn up by The American Forestry Association two years ago with the collaboration of top-ranking experts from the fields of government, industry and national conservation. Basis for the program was the Association's fact-finding survey of the nation's forest resources, a three-year undertaking. This enabled the program makers to lay down guiding principles and proposals so comprehensive and realistic that, when translated into action, they should meet forestry's needs for years to come.

In essence, the Association's program calls for action along five major lines: informing the public, and particularly owners and operators of forest lands, as to the economic possibilities of sound forestry practices; protection of forests from damage by fire, insects and diseases; better harvesting practices to insure successive crops of timber; better utilization of wood; and restoring denuded and understocked lands to full productivity by planting trees.

Specifically, the most pressing need is to broaden and bring up to date forestry programs within the various states through improved and expanded federal-state legislation and adequate appropriations; to expand research to achieve the highest type of scientific management on forest-producing lands, and to improve and develop new uses of the products that are harvested from them; and to apply to all lands under federal jurisdiction—lands belonging to the people of the nation—the best administration and the most efficient management of which we are capable.

The 81st Congress, committed by President Truman to positive action, has a wonderful opportunity here.

"November Sunset"—Photograph by Allan Kerr

Valley of Faith and Works

The Tennessee Valley, says TVA's new chairman, is embarked upon a full scale working demonstration of the unity of all natural resources and of man's dependence upon them

By GORDON R. CLAPP
Chairman of the Board, Tennessee Valley Authority

IN the history of conservation thought, the lessons of our disappearing timber have formed the spearhead of the conservation movement. Concern about our forests has illuminated our concern about soil and water conservation. Gradually we are coming to see that the earth, its atmosphere, and the sun, the rain, and man must be embraced within the meaning of the word "conservation."

The Tennessee Valley is a region which has dedicated itself to the best traditions of conservation. You may witness here a new approach to the full control and use of once destructive waters. You may see the physical proofs of dynamic conservation theories and practices applied by thousands of private citizens and landowners to the soil under their feet, the forests around them, working with the rain and sunshine that give life to the hills and valleys of this great region.

The Tennessee Valley as a whole has embarked upon a full scale working demonstration of the unity of all natural resources and of man's dependence upon them. This demonstration is testing and, we believe, affirming the wisdom and feasibility of the ideas and principles born of many years from the leadership of organizations such as The American Forestry Association—leadership that has never despaired of man's ability to feed and clothe himself from nature's power to produce life and support growth.

The Tennessee Valley Authority, and I believe I can say the people of the Tennessee Valley, share this faith in the capability of an informed mankind to evolve a harmonious and working partnership with nature. That is the faith which motivates the TVA. We cherish a deep conviction, born of experience, and inspired by our predecessors, that modern science, modern management, and the American tradition of human freedom can go hand in hand toward greater abundance and a better life.

There is much that can be told about what is going on in this valley. I might tell you the story of the erratic Tennessee River, fed by fifty inches of rainfall in an average year; the tragic history of erosion on the hills and slopes, the burning and slashing of once proud forest growth, of a waning fertility around the roots of too much cotton and corn, of the floods, the droughts, and the waste of energy from the sun and from uncaptured rain because of slopes too bare to make either work for man.

I should like to tell you about the TVA dams, how they changed the river, tamed its floods, made it navigable and routed it through turbines to produce billions upon billions of new kilowatt-hours of electric energy. Rural electrification, home-grown industries built on the new productivity of farms and forests; new scenic assets for play and recreation; a victorious war against the malaria mosquito, an increasing abundance of

TVA Photo

THE AUTHOR has been associated with the Tennessee Valley Authority since 1933, serving as director of personnel and general manager before being named Chairman of the Board in 1946. A native of Wisconsin, he was educated at Lawrence College and the University of Chicago, receiving an M. A. Degree. Prior to his work with the TVA, he was assistant dean of Lawrence College.

Forestry is a vital part of the Valley's whole development, says Mr. Clapp — and progress is based on cooperative efforts of public agencies and organizations working with woodland owners, timber operators and forest industries

fish and wildlife—these and many other things must be included in the story of the Tennessee Valley development.

And there is the story of how phosphate, lime, and nitrogen are used judiciously in thousands of tests and demonstrations on practical farms, aided by research and the knowledge of the state institutions and the county agents. These programs are bringing to a halt and will finally reverse a destructive cycle. They are making the rain and sunshine perform more efficiently on the hillsides and in the bottoms where row crops are changing places and giving way to grass and tree growth that covers and protects the watershed.

About fifty years ago, an active forestry program was started in this country primarily as a governmental enterprise to combat forest depletion in the interest of public welfare. Because private groups were slow to see their responsibilities, the future of the forests was regarded as a public problem. National and state forests were reserved or acquired and placed under the custody of public agencies. Public organizations were established for forest fire control. In comparison, the efforts to develop private forest production by emphasizing the opportunities and responsibilities of woodland owners, operators, and industries who control seventy-five percent of the nation's commercial forests, have more recent origin; the results of these efforts, as a rule, have been relatively minor and inadequate.

Within the last few years, however, private forestry has begun to advance in many sections of the country. The fighting crusade *against* forest depletion is gradually changing to a more constructive program of working *for* forest development. This is a healthy sign of progress in our state of mind and our expenditure of human energy. We believe it will also get better results in the life and productivity of our forests and in the income men can withdraw from the products of the land.

In the Tennessee Valley you will hear about some of the progress that is being made here in forestry—a vital part of the valley's whole development. Such gains as we can report are the result of the cooperative efforts of many public agencies, institutions, and organizations work-

ing with woodland owners, timber operators, and forest industries.

You will see some of the 138 thousand acres of eroding and idle lands that have been reforested with more than 173 million tree seedlings produced in TVA nurseries.

You may see a few of the hundreds of forest management demonstrations that have been established on small farm woodlands and on large industrial properties. These demonstrations on privately owned lands provide visual examples of good selective cutting, improved utilization, and sustained-yield management. You may see and hear something of the constructive efforts of farsighted lumbermen and sawmill operators who are participating helpfully in securing widespread adoption of good forestry practices.

You will be encouraged to learn of the project going forward in Tennessee counties to provide state and local cooperation for more effective forest fire control. And if you visit those sections of Alabama, North Carolina, Kentucky and Virginia that lie within the Tennessee Valley, you will see the results of cooperative fire control demonstrations with the states which are reducing the annual burn to the point where long-term timber growing can become an attractive business.

As you study and observe what is going on here I am sure you will remember that the application of conservation practices to twenty-six million acres, the area of the Tennessee Valley, is not to be accomplished in one day. A region-wide conservation demonstration embracing all resources, for that is what this valley is trying to establish, is not an easy task. Nor is it impossible.

Some have suggested that progress might be more swift if the power of a sovereign government were applied to force modern management on the land or in the forest. We do not share that view. We have seen the persuasive power of fact, the teaching force of thousands of demonstrations on farms and in the forests work its way into the minds of more and more people. They constantly press the key question, basic in our American system: will these new methods of farming and of forest management work; will they feed, clothe, and educate our families? Research, fact, and the results of working demonstrations of farmers and landowners, appraised and interpreted by their own local and state agencies and their neighbors, are providing an encouraging answer to these questions. Emulation of the best of tested practices is the next step for many.

If the valley's progress seems slow we suggest that the remedy is not to reject educational methods, but rather to extend and multiply the region's educational efforts.

What you may observe in the Tennessee Valley may serve to remind you of another question which keeps recurring in men's thoughts about the conservation and use of the world's natural resources.

We are now being tongue-lashed by the prophets of despair. They say the world is much too crowded—so full of human beings that something ought to be done to trim our population to the expert's notion of what the sun and earth can produce on this planet.

I do not for a moment ridicule the theory of these modern disciples of Malthus. They preach a thesis that should make us reassess our scale of values. And when one examines their generalizations and reviews the particulars of their frightening statements, one cannot help but be impressed with the general validity of their diagnosis.

But their remedy is frequently worse than the despair it reflects; they seem to suggest that our salvation—our hope for survival—lies in resort to rule by the experts. We are asked to view the world as a factory and to turn its management over to a select few who can rationalize its operations for maximum efficiency. Those with the "know-how" would manage man's comings and goings; they would determine who shall live, who sall eat, and who shall increase his tribe.

I am sure these prophets of calamity can be helpful in informing our minds and in educating our aspirations. But the individual, through the power of his own independent *will*, informed and persuaded by fact and hope and disciplined by what conscience he has, should, I believe, produce a more fruitful life than could be achieved under the thumb of a managerial elite. A quicker obedience to the "rules of conservation" will not save us; we must learn how to be individual conservationists.

The dynamics of resource development in the Tennessee Valley may help to refute despair. What is being done here can be done elsewhere. The methods of voluntary self-education by which the individual efforts of men and institutions are blended together in a quiet crusade for regional rebirth place the experts at the elbow and ear of the citizen, not astride his neck.

The methods at work in this valley are based upon a faith in the ability of the individual to learn how to bring self-interest and public welfare together. Faith in the ability of our civilization to learn enough quickly enough and to act according to what we know is the cardinal test of the wisdom of this age. Here in the Tennessee Valley there is that faith. Many obstacles and problems challenge the valley's future. But in what is happening here we believe you will find new and reassuring reasons why that faith is not an evidence of naive minds but a product of practical works.

HIGHLIGHTS OF MR. CLAPP'S ARTICLE

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* * *

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The methods at work in the Tennessee Valley are based upon a faith in the ability of the individual to learn how to bring self-interest and public welfare together.

* * *

Faith in the ability of our civilization to learn enough quickly enough and to act according to what we know is the cardinal test of the wisdom of this age.

THE CHINESE CHESTNUT MAKES GOOD

By AMANDA ULM

Until World War II about sixteen million pounds of chestnuts were imported yearly from Europe to the United States. When these importations, most of which had come from Italy, ceased abruptly, Chinese chestnut trees planted experimentally in this country in the 1930's began to assume importance.

The acreage planted had been small. Many of the trees had been neglected, but others survived in splendid condition and were bearing from twenty to well over 100 pounds of nuts a tree. With chestnuts selling on the wholesale market at about fifty cents a pound, and nuts for planting bringing as high as $2.50 a pound, the man who had planted a few trees here and there began to wish his whole farm was in Chinese chestnuts.

The good word spread rapidly among gardeners and lovers of chestnut trees. Nurserymen, swamped with orders for Chinese seedling trees, were unable to supply the full demand. Seedlings were retailing from one to three dollars, and grafted varieties sold for as much as four dollars. Many orchardists found it more profitable to sprout their crops and sell young trees than to market the nuts, but Clarence A. Reed, an authority on oriental nuts at the U. S. Department of Agriculture, cautioned growers against undue enthusiasm. He said, "The importation of chestnuts from Europe will doubtless again appear with the return of normal international relations."

Yet almost simultaneously with the beginning of hostilities in Europe the dread chestnut blight which had ravaged our magnificent stands of chestnut, appeared on the European species in Italy. The Italians did what they could, but with war and eventual defeat on their hands they were unable to check the disease. The spores of the blight fungus began to spread as they had done in this country, and despite our sympathetic help, the outlook for the Italian chestnut has been judged hopeless. It will merely be unusually good luck if chestnut blight fails to spread to France, Spain and Portugal, countries which had also exported small

quantities of chestnuts to the United States in the days before the war.

Today the Italians are asking us for resistant chestnuts. We have been sending them some of our selected Chinese chestnuts, but it will be years before they can catch up with us. In the meantime, we must supply ourselves, if we are to have chestnuts at all.

Unfortunately, the boom in Chinese chestnuts and the scarcity of seedlings and grafted varieties have led a number of unwary orchardists to plant stock which may have very little future value. Three new varieties, Nanking, Meiling and Kuling, which have shown very high bearing records, have recently been turned over to nurserymen by the nut project of the Department of Agriculture. Because of grafting difficulties with the variety Carr the majority of nurserymen have been slow to utilize existing varieties. They prefer to sell seedlings because of lower production costs, and even impure seedlings, the result of accidental pollination of Chinese trees with undesirable Japanese species, are sometimes passed on to uninformed buyers.

Dr. J. W. McKay, cytologist and plant breeder with the government's nut project, points out that poor stock derived from early importations of low-bearing strains, or insufficient knowledge in regard to cultural or climatic factors, may bring about disappointment leading to a deflation of the present boom. On the other hand, nurserymen insist that seedling stock will put chestnuts on our tables ten years sooner than grafted varieties. At any rate, it is important to realize that any Chinese chestnut orchard enterprise founded on seedling trees will sooner or later find itself in competition with superior grafted varieties.

Back in the nineties of the last century a similar boom in chestnut orchards came to a bitter end as a result of chestnut blight which, ironically, entered this country when orchardists were at the height of their enthusiasm. Chestnut blight has been termed the most devastating of all plant diseases. Both European and native species of chestnut are highly susceptible to blight and once infection has occurred in either species death is inevitable. There is no protection against the spores, and isolation and quarantine, as these have been rigidly enforced in California where a few plantings of European and native chestnuts are still in existence, afford the only means of prevention.

For years a resistant strain of the native chestnut tree was sought assiduously but never discovered. Russell Clapper of the division of forest pathology, Department of Agriculture, crossed the Chinese species with native chestnuts and obtained promising progeny with a high degree of resistance, but his breeding work has been concentrated on producing a woodland type of tree. He is mainly interested in replacing chestnuts from the farmer's woodlot. One use of the chestnut was for tannin, a chemical obtained from the bark of chestnut trees. Sentimental regard for native chestnut often overlooks the fact that the greatest economic value of the extensive stands of chestnut once thriving in our eastern forests lay in the tannin content of the bark—not in the sweet nuts which many of us as children picked up under the trees in late September and early October. But it is impractical to breed resistant chestnut trees for nuts as well as tannin content. As Dr. H. L. Crane, in

(*Turn to page* 518)

While experts warn against over optimism, results obtained with imported Chinese chestnut trees in America have been most heartening—have created new hope for the revival of a chestnut industry

MAINE—One Year Later

By JAMES B. CRAIG

Portland Press-Herald

EARLY this fall when word flashed out of Maine that the state was in the grip of drought as serious in many respects as that which attended the tragic forest fire disaster of October 1947, the question immediately arising was "Will it happen again?"

For still vivid in the memory of many in the fiery destruction of Bar Harbor and other towns and communities—of highways choked with refugees fleeing the holocaust. Ten lives lost, a thousand homeless families, property damage in excess of $32,000,000—these are tragic chapters in the fire story of Maine in October, 1947.

I was dispatched to Maine in late September to get the answer to this question—to find out what if anything had been done to remedy the conditions, excluding weather, that spelled disaster for a portion of the state last fall.

On the ground I found little change. The protection pattern of the past, with its hodge-podge of divided authority, was still in existence—the state responsible for the wild northern forests, the so-called organized towns functioning independently in the southern coastal regions. But there was a bright star of hope on the horizon. Out of the ashes of last year's fires there is dawning a new pattern of centralized forest fire protection—a pattern that may erase the threat of recurring catastrophes.

Major reason for the tremendous losses in the 1947 disaster, experts now agree, was the lack of centralized forest fire protection. Only in what is called the Forestry District, an area of ten million acres in the wild northern section of the state, was there centralized protection under the Maine Forest Service. In the southern coastal areas, where upwards of seven million acres with 493 cities, towns and plantations operate under local autonomy, the state fire control agencies have no authority. It was in this area—in the so-called organized towns—that town fire departments, working independently, attempted with tragic failure in 1947 to stop the raging inferno that swept across one town line after another.

How disastrous this failure was is told in the official fire record. Of 7,000,000 acres controlled by the organized towns, 150,000 acres were burned over with a property loss of $32,000,000. In the 10,000,000-acre Forestry District, under organized protection of the Maine Forest Service, but 20,000 acres were burned the fall of 1947—with property damage around $200,000.

The people of Maine are keenly aware of this, I found, and they are uneasy. In late September they glumly noted an editorial in a Portland newspaper that stated "matters now stand exactly where they did last fall." And assurances by Governor Horace Hildreth that strong emergency measures had been planned to meet any repetition of the 1947 disaster failed to dispel their fears.

For the people of Maine know in their hearts that unless something is done to achieve realistic fire protection on the seven million acres un-

How long will it be, Maine people are asking, before action is taken to prevent a recurrence of the calamitous 1947 fire tragedy. Here is a firsthand account of what is happening

der control of the organized towns, all their stubborn efforts to rebuild homes, schools and churches may go for naught. And in September their program of rehabilitation was well under way. In the disaster area homes were being rebuilt, schools and churches were going up on their old foundations, businesses were being reestablished—the valiant spirit of the Maine people seeing to that. Along with this has been a salvage operation of some stature—150 million board feet of timber from the 1947 burned over area. And important steps are being taken to restore tree growth on dessicated wasteland.

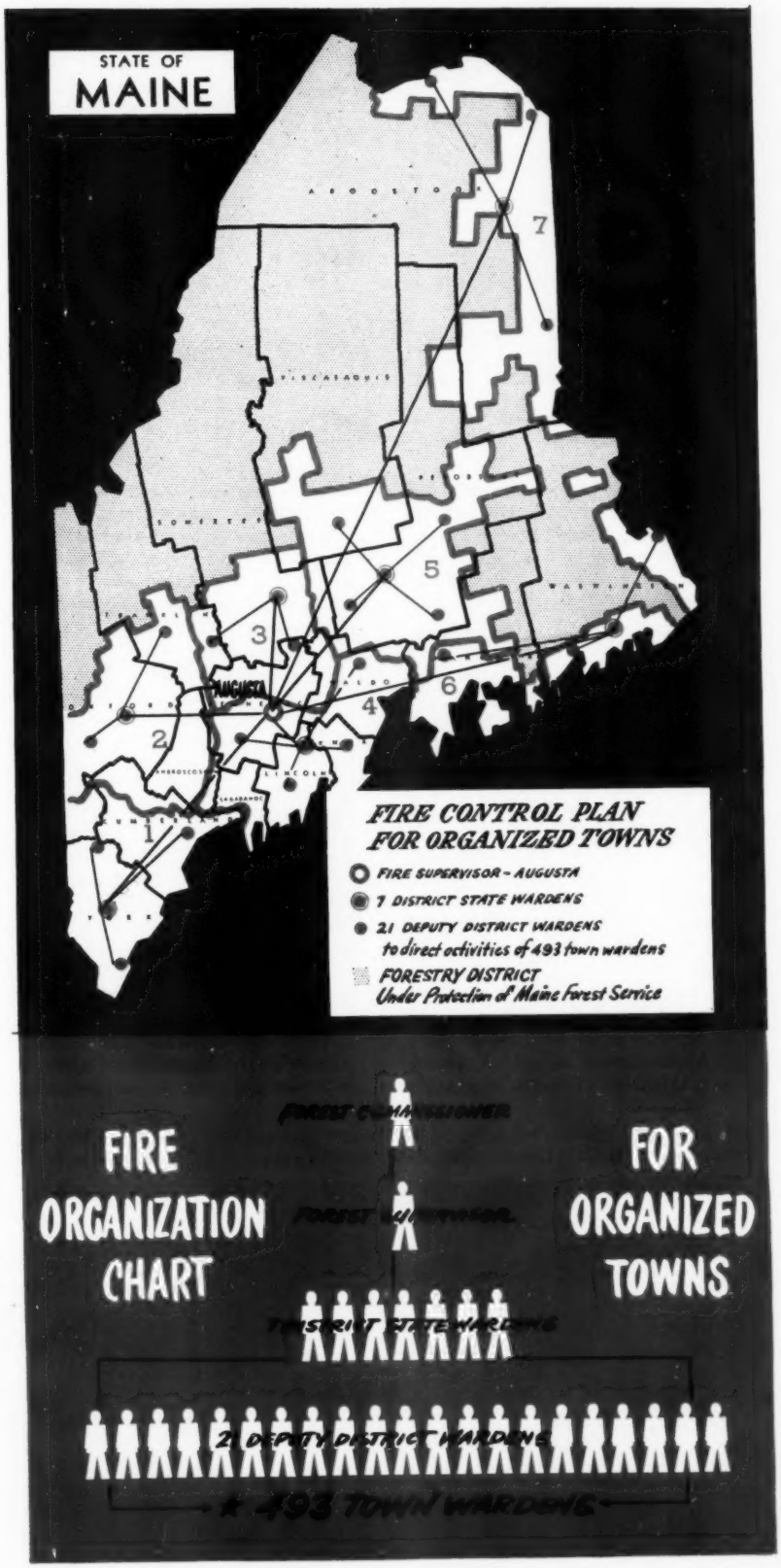
Early October rains relieved the tension somewhat but have altered in no way the general conviction that some sort of centralized fire control premised on law is the only way out. And all eyes are turned to Augusta where Forest Commissioner A. D. Nutting is drawing up such a plan to present to the state legislature when it convenes in January.

What is this plan? Examine the map on this page and you will note the relative positions in the state of the Forestry District, under organized protection of the Maine Forest Service, and the so-called organized towns, each town under a local fire warden, working independently, even of neighboring wardens. The principal function of the state in these towns is "cooperation." The Maine Forest Service furnishes advice *when it is requested*—and aid *only on invitation* from town authorities, and generally when fires get out of control, as was the case in 1947.

Town fire wardens, appointed by the selectmen for one-year terms, are often poorly trained and exercise little authority. The chief cog in fire protection in the towns at present is the fire departments which have frequently failed to attack woods fires with the same aggressiveness they demonstrate when called upon to battle a burning town building. Responsible for property in the small area that comprises their own town, the departments have at times refused to cross town lines to prevent the spread of fire from a neighboring town to their own.

To correct the obvious weaknesses inherent in this pattern, Commissioner Nutting is developing a program with authority for forest fire protection in the organized towns centered in the Maine Forest Service. Key props in this program would be state appointment of town forest wardens, legislation describing their duties, and a fire supervisor for the

The proposed pattern for centralized forest fire protection in Maine



U.S.F.S. Photo by Lee Prater

Maine Recovers—Operators hit the salvage job hard—saved estimated 150 million feet of pulpwood

Rapid movement of salvage to mills was accelerated by a survey of damage by state and federal foresters

organized towns to coordinate and direct all fire-fighting activities in his jurisdiction of seven districts.

The pattern of the fire supervisor's protection network as outlined by Commissioner Nutting and Deputy Austin H. Wilkins, hinges on seven year-around state district fire wardens and twenty-one deputy wardens, all capable of acting as fire bosses, and strategically located on the basis of watershed accessibility. With each district headquarters equipped with two-way radios, rolling stock and a cache of fire-fighting tools, the fire supervisor would have a mobile group of trained fire bosses ready to move in on all major fires.

The next step, and probably the most important one, in Nutting's plan would be appointment by the forest commissioner of paid fire wardens for the 493 towns, cities and plantations—and for four-year terms instead of one, as is the case at present. Appointments would be subject to the approval of town selectmen. It would be mandatory that all wardens attend training schools in fire-fighting technique conducted by the Maine Forest Service, submit town forest fire protection plans to the state-appointed fire supervisor, and issue burning permits.

After training at the state schools, town wardens would be encouraged —not compelled—to draw on local facilities to train town fire protection units and to carry on fire prevention activities. Recruits for the town units would be drawn from volunteer fire departments, state highway and sawmill crews, farmers, and students above the junior high school level.

Working closely with deputy state district fire wardens, the town wardens would be responsible for all small fire suppression work in their jurisdictions, for the inspection of logging slash violations and the issuance of burning permits. The plan includes supplemental aid in emergencies by the Maine Fire Chief's Association and other active groups, but the principal striking force for forest fires would be the men under the fire supervisor.

Both Commissioner Nutting and Deputy Wilkins stress that centralized control and authority does not mean the substitution of a large force of salaried state employees to the detriment of town fire wardens and emergency crews of fire fighters. Actually, the fire supervisor would be the only addition to the Forest Service staff in Augusta. The local organizations would be an indispensable part of the overall plan. Many of the present wardens would continue under the new setup. What the plan does require is that the authority of the skeleton state organization shall be supreme and capable of being instantly exercised whenever it is needed.

It is estimated that the program would cost around $300,000, about four times the amount now allocated by the state for forest fire fighting, a modest enough amount considering

A New Start—Burned out farmers like Howard Ricker of Waterboro, obtained equipment, planted a crop

Robert Winslow, of Brownfield, is back in the poultry business again after losing everything in the fire

Rebuilding started. The Red Cross rebuilt this house and 400 more for people with insufficient assets

American Red Cross Photos by Poli

Town of Waterboro this spring began to rise from the bleak ruins left in the wake of 1947 fires

the scope of the project. Banking on his knowledge of Maine people, Commissioner Nutting does not want to make the mistake of asking for too much at first. "Our first big objective," he said, "is to attain some form of coordinated, central control."

At the time of going to press details of the plan had not been made public, but judging from the pressure of public opinion for an action program, the program unquestionably will receive widespread support. Indeed, there are some officials who believe the public will demand a more forceful approach to the situation, pointing out that failure of the plan to stipulate *all* duties of wardens and make them enforcible by legislative action are weaknesses that eventually will have to be corrected.

Commissioner Nutting undoubtedly recognizes this. He makes a strong point, however, of the fact that state appointment of wardens would result in a closer tie between the Maine Forest Service and the towns—would place responsibility on the Forest Service and place wardens in communities that have failed in the past to appoint them.

What a large segment of the public has been demanding since early in the year is that Governor Hildreth call a special session of the legislature to deal with recovery problems. This pressure for emergency action reached a high pitch in January and was revived this fall when drought again struck the state and fires in increasing number were reported. On September 5, thirty-one fires were burning in Maine, one on a seven-mile front near the towns of Rockland and Rockport.

The governor, however, took no action on the special session. When I interviewed him in late September he described these early demands as "blind waves of hysteria," adding that there was every indication that a special session at that time would not only have resulted in great expense but in utter confusion with nothing accomplished. The second wave of pressure he characterized as having "political inflection."

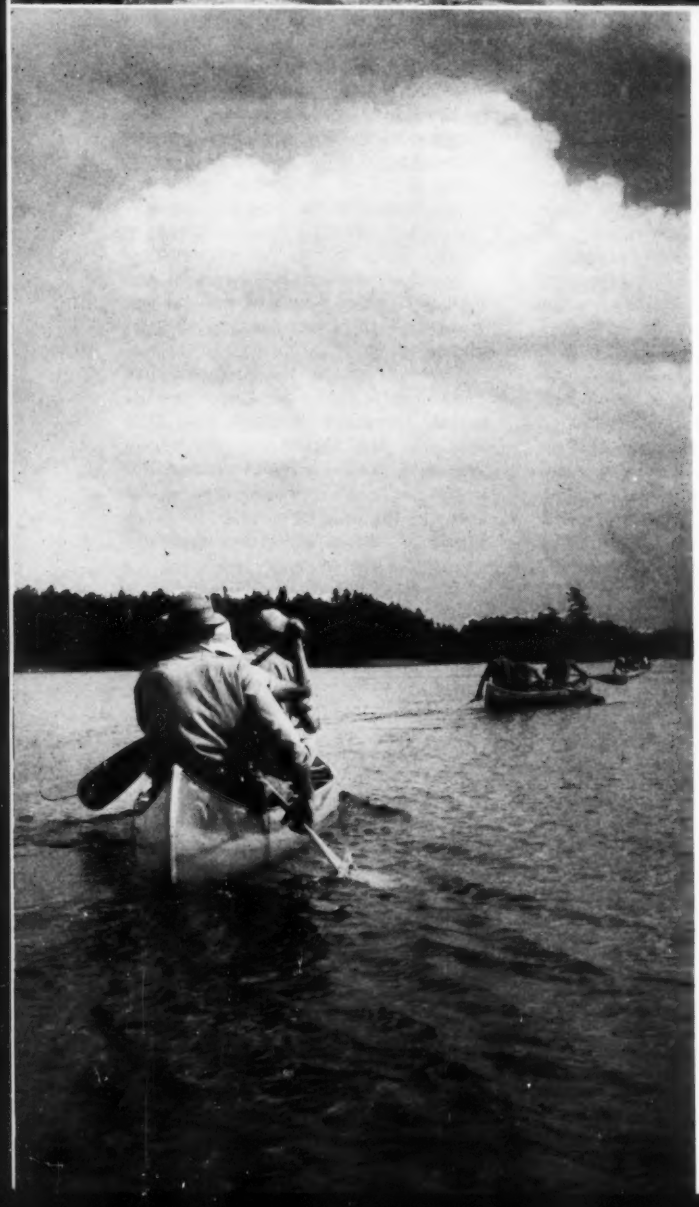
When some semblance of stability had been restored, he said, selectmen of the stricken towns were requested to state their needs in itemized reports. These needs were met, the governor declared, by abatement of real estate taxes, by allocating highway funds for town needs, by use of the state education matching fund and by borrowing from the contingency fund. Some of the most vigorous original supporters for a special session have since admitted that he was right and they were wrong, he declared.

Commenting on the proposed fire protection program for the organized towns, Governor Hildreth said that this was the forest commissioner's province. As to various recommendations made by special groups, he pointed out that most of these were broad gauge in pattern and, while

(*Turn to page* 514)

The Red Cross helped this Maine lobster fisherman to replace his stock of lobster pots destroyed by fire

Prospects are brighter for John C. Small, of East Waterboro. Wiped out, his store has been rebuilt



CANOEING ALONG THE BORDER

USFS Photos by Lee Prater

A PARTY of sixteen members of The American Forestry Association came home in August from a "water wilderness" expedition in the Quetico-Superior international border country with enthusiastic reports on canoe caravans in primitive country.

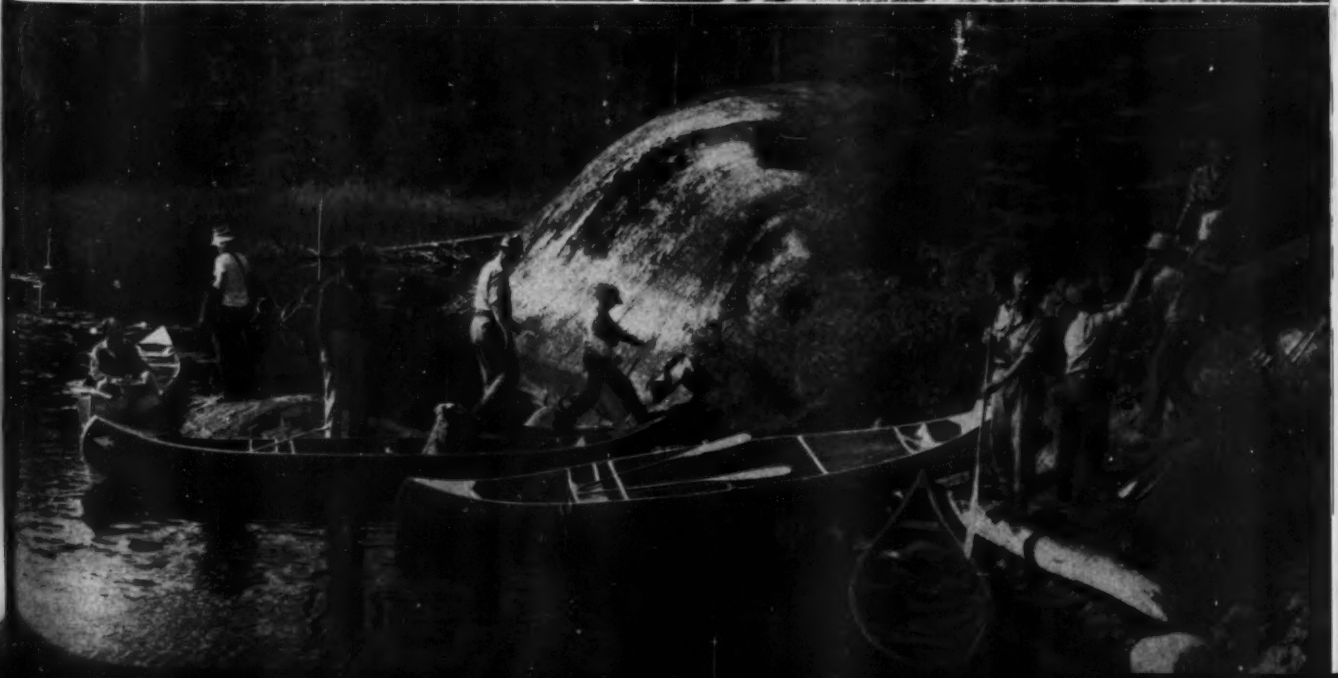
Blazing the way for future wilderness expeditions, this group, the first to enter the area under the auspices of the Association since 1941, spent ten days in the Superior National Forest on the United States side of the border and in the Quetico Provincial Park on the Canadian side.

Assembling at Ely, Minnesota, the party took to canoes on the Nina Moose River and traveled northward and eastward along the routes of the early French voyageurs.

Among the modern voyageurs was Lee Prater of the United States Forest Service, who made scores of photographs that constitute a faithful day-by-day chronicle of the expedition. The pictures shown on these pages by Mr. Prater are action shots of canoe party operations in typical settings.

Above, the party is shown preparing to push off from Curtain Falls. At the left, members of the expedition cruise on Sarah Lake. On the opposite page, at upper left, Albert Lowrie, 78, oldest member of the party, holds aloft the eleven-and-a-half pound great northern pike caught at Table Rock on Crooked Lake. Table Rock, incidentally, was the scene of many famous Indian council fires in early days.

The picture directly below Mr. Lowrie was snapped at Brent Lake, and the remaining two on the page were taken at the conclusion of the Basswood River portage. The big rock shown in the background is typical of the Quetico country.



PROGRESS THROUGH COOPERATION

The 67th Annual Meeting of The American Forestry Association reflects progress in cooperative land management, with emphasis on small woodlands

"CONSERVATION and development of our natural resources must be viewed as a major national undertaking, not by the government alone, not by timber operators alone, but by citizens and the government working together."

In these words, Gordon R. Clapp, chairman of the Board of Directors, Tennessee Valley Authority, sounded the keynote of the 67th annual meeting of The American Forestry Association at Chattanooga, Tennessee, October 8, 9, 10 and 11. Convening for the first time since the war, the Association combined field trips and demonstrations with progress reports and panel discussion to inform the public on key problems confronting American forestry, with emphasis on the cooperative approach to sound land management and the effectiveness of current efforts to bring the small woodlands of the nation under management.

Speaking at the American Forestry Banquet, Mr. Clapp, whose address is printed in full on page 488 of this issue, described the methods at work in the Tennessee Valley as "based upon a faith in the ability of the individual to learn how to bring self-interest and public welfare together.

"Some have suggested," he said, "that progress might be more swift if the power of a sovereign government were applied to force modern management on the land or in the forest. We do not share that view. We have seen the persuasive power of fact, the teaching force of thousands of demonstrations on farms and in the forest work its way into the minds of more and more people."

The key question, he declared, is "Will these new methods of farming and of forest management work? — will they feed, clothe and educate our families?" Research, fact and the "results of working demonstrations of farmers and landowners, appraised and interpreted by their own local and state agencies and their neighbors, are providing an encouraging answer to these questions," he said.

William S. Rosecrans of Los Angeles, president of The American Forestry Association, outlined the major forestry problems facing the nation and recommended action along five main lines.

He called for (1) education of the general public and more particularly of owners and operators of forest lands as to the economic possibilities of good forestry practices; (2) protection of forests from damage by fire, insects and diseases; (3) harvesting so that a new crop of timber may be grown and, where possible, on a selective basis; (4) better utilization of wood; and (5) tree planting to restore denuded or understocked areas to full productivity.

Commenting on present conditions, he reminded the conference that the Association's post-war forest resource appraisal revealed that more than four million owners of small woodlands, mostly farmers, control fifty-seven percent of the nation's commercial forest land, and that not more than ten percent of these properties are operated on a sound forestry basis.

The effectiveness of present efforts to solve this problem was brought out in a panel discussion, with Lloyd E. Partain of Philadelphia, manager of the commercial research division of the Curtis Publishing Company, and a director of The American Forestry Association, acting as moderator. Panel members, each directing a program designed to bring small woodlands under management, were William R. Sizemore of Alabama, director of More Trees for Alabama; Harris A. Reynolds of Massachusetts, secretary of the New England Forestry Foundation; W. M. Oettmeier of Georgia, president of Forest Farmers Association Cooperative; M. N. Taylor of Wisconsin, executive director of Trees for Tomorrow, Inc.; Joseph F. Kaylor of Maryland, director of the Maryland Department of State Forests and Parks; and R. W. Graeber, extension forester of North Carolina.

Mr. Sizemore described the More Trees for Alabama program as one of education and assistance to the woodland owner, in which all government agencies, federal, state and local, cooperate with private industry. "Simply stated," he said, "we are trying to increase the yield per acre of woodland."

The first stage of the program he described as "interest-arousing," in which 450 advertisements, plus hundreds of articles and editorials on forestry appeared in the newspapers of the state. In addition, 175 thousand booklets dealing with the small woodland as a cash crop were distributed; motion pictures depicting proper harvesting methods were shown to more than 500 thousand people.

Action now has shifted to on-the-ground instruction — and with satisfactory results. "More than 3,000 owners so far have requested assistance in the management of their woodlands," Mr. Sizemore said.

The purpose of the New England Forestry Foundation, explained Mr. Reynolds, is to give complete forestry service to New England woodland owners at cost.

"Its plan of operation," he said, "is to set up forest management centers, each in charge of a resident forester, who renders any type of

AFA President W. S. Rosecrans called for intensive educational program, better harvesting practices and tree planting to restore denuded lands

Photos by Murray Knowlton

Highlighting the meeting were interesting field trips into many corners of the Tennessee Valley

***Above,* part of the group inspecting famous Copper Basin, scene of extensive erosion**

***Upper right,* members at Fontana Dam in North Carolina, largest in the TVA system**

***Right,* looking down from Point Park, in the Chickamauga Military Park, on the Tennessee River**

***Lower right,* members at Chickamauga Dam, multipurpose project operated by TVA as part of unified development of Tennessee River system.**

***Below,* discussing a point during woodland management demonstration in Georgia**

forestry service from the planting of trees to the sale of lumber.

"The Foundation now has more than 250 clients," he revealed, "located in 140 townships in four states. It has nine foresters on its payroll. It has made, or is in the process of making, plans for around 100 thousand acres of woodland, containing merchantable stumpage worth $1,000,000. It has sold and supervised the cutting according to management plans of more than eight million board feet of timber."

At least 100 forest management centers will be required to render service to the owners of the 20 million acres in small holdings in New England, Mr. Reynolds said. "These lands are growing on the average only about 100 board feet an acre annually, and we know that under management they are capable of producing three times that amount. It has been estimated that if we can double the present production, the new raw material will provide the opportunity to create at least 100 thousand permanent jobs."

According to Mr. Oettmeier, the program sponsored by the Forest Farmers Association Cooperative is designed "to help the man who grows timber." Landowners support the association through annual dues based on their forest acreage. These funds are used to provide technical forestry assistance and to interest other landowners in better forest practices.

"We have as our goal," Mr. Oettmeier said, "maximum production of the highest quality products which can be cut to yield the highest cash return from an integrated utilization."

To reach more landowners, Mr. Oettmeier advocated further study and analysis of forest ownership, and educational activities based on findings.

Private industry is behind the Trees for Tomorrow approach, Mr. Taylor brought out. Operating in seven Wisconsin counties, its purpose is to "project good forestry to landowners, to schools, to 4-H Clubs — to entire communities."

So far, the project has distributed two and a half million trees, prepared forest management plans for 28,000 acres of privately-owned woodland, awarded $10,000 in forestry scholarships, helped establish twenty-seven school forests and four memorial forests.

"The most outstanding single result of our program," he said, "has been the establishment of the idea that abandoned fields, a farm woodlot, or a tract belonging to a resort, a mink farmer, or an absentee owner can become, with improvement, an economic asset while the owner is earning his livelihood from another source. This fact is fundamentally important in northern Wisconsin where, in most cases, forest management means setting up a long-term program."

Maryland, according to Mr. Kaylor, has been successful in carrying the educational process one step further through cooperative regulation. The medium is the Maryland Conservancy District Act of 1943, which legalizes local boards to draw up forest practice rules to apply to timber owners and operators. This type of regulation is accepted, Mr. Kaylor said, because of its local origin and because the people of the state have come to realize the importance of Maryland's timberlands. "Better than ninety percent of the people are working with us," he concluded.

Training the landowner to better use of his forest land through demonstration methods was advanced by Mr. Graeber, who pointed out that the major responsibility for what happens to the productivity of the forest lies with the landowner himself. Recounting examples of advancement made through woodland demonstrations, he cautioned the foresters against trying to move too rapidly.

"People are still forestry's greatest problem," he declared, "but we should not push the problem too fast."

Ray Weston of Mobile, Alabama, president of the Southern Pulpwood Conservation Association, told the conference the basic steps involved in the replacement of timber resources are protection against uncontrolled forest fires, a cutting system — any system — assuring regeneration of growing stock and acceleration of growth, and planting of all marginal and submarginal lands with seedlings of favorable species of pines.

Emphasizing the fact that in the South the great part of timber acreage is privately owned in small blocks, he urged that education in conservation be concentrated in this field. His own organization is working on an educational program, he said, "at the low level of the stump country."

Dr. I. T. Haig, director of the Southeastern Forest Experiment Station at Asheville, North Carolina, compared research accomplishments in the field of agricultural production with those in the less developed field of forestry.

"Only when timber is grown commonly as a crop — when high yields are the accepted aims of operating landowners, will we see the use of improved trees and improved methods of culture and better methods of harvesting similar to those in agriculture," he said.

Today, when we attempt to prescribe management methods for landowners our knowledge, in spite of past advances, is still too general, Mr. Haig said. Despite such research miracles in utilization as cattle feed from sawdust, rayon from wood, wood that is plasticized, molded, laminated, impregnated, distilled and spun into a variety of useful products he expressed the opinion that "widespread application of research to our forests, particularly in timber growing," is still ahead of us.

"We must take a lesson from other fields," he said, "and carry on in adequate degree the long-time and often tedious and expensive research work needed and prepare for the day when prices, markets and informed and interested timber farmers furnish the basis for the use of such knowledge."

James O. Hazard, state forester of Tennessee, pointed out that forest

(*Turn to page* 528)

Members of panel discussing small woodlands—Standing, left to right, Sizemore and Kaylor; seated, Oettmeier, Graeber, Taylor, Partian, moderator, and Reynolds

Murray Knowlton

Senator Arthur Capper receives The American Forestry Association Conservation Award from President William S. Rosecrans. At left, Stanley Horn, editor of the *Southern Lumberman* and master of ceremonies at the banquet

For Distinguished Service . . .

Senator Arthur Capper, of Kansas, receives first AFA Conservation Award

In recognition of "outstanding service in the conservation of America's land, water and forests," Senator Arthur Capper of Kansas was presented with The American Forestry Association's Conservation Award at its 67th annual meeting in Chattanooga, Tennessee, on October 9. The 83-year-old U. S. senator, retiring this year after three decades in the Senate, has long been a leader in the conservation of the nation's natural and human resources.

William S. Rosecrans, president of The American Forestry Association, presented the cottonwood (state tree of Kansas) plaque to the senator on behalf of the Board of Directors and members of the association. Mr. Rosecrans' statement follows:

"Probably nowhere in the record of the Congress of the United States can we find a stronger and more consistent supporter of the conservation movement over the years than in the record of Arthur Capper of Kansas. His interest and activity in conservation, however, go back far beyond his thirty-four years of public life as governor of the state of Kansas and as United States senator from that great agricultural state.

"A typical American farm boy, Arthur Capper early realized the dependence of the American people on our land heritage and came to recognize that good land management is the backbone of American strength and its promise for the future. His interests and activities thus centered around the land and the people dependent upon it—natural and human resource conservation.

"From these early associations, coupled with an ability to organize the human resource for its better individual and collective development,

(*Turn to page* 506)

Kendall Wood (right) and Spencer Gross, perfectors of aerial timber cruising, study aerial photo preparatory to starting topographic and forest-type maps

SKY CRUISER

Forest Engineer Kendall Wood is showing West Coast woodsmen something new — and exciting — in cruising timber

By ARTHUR W. PRIAULX

IF Kendall Wood had proposed to fall timber with a bazooka gun he couldn't have created a greater sensation among West Coast timber owners. It was late in 1946 when this young Portland consulting forest engineer started a one-man blitz to sell western timberland owners the most fantastic proposal most of them had ever heard.

"I can cruise your timber from the air," he told lumbermen as he invaded their private offices. "I can give you the size, height and age of your timber and the cubic volume. I can tell you whether the timber in a given area is Douglasfir, Western redcedar, or hardwoods. And I can give you a topographic map from aerial photographs in one-tenth the time you can do the job by ground methods."

Here certainly was something to interest timber men. Timber cruisers were a vanishing race of he-men, and many companies needed to know what they had in timber reserves. They needed fast, accurate maps of tree farms so they could lay out intelligent operating and cutting budgets as far ahead as 100 years. They needed to know how much timber they had, where it lay; how much young reproduction was growing; where roads should be built for log hauling; where fire protection networks of trails and roads should be established.

Climactically, the young forest engineer added this clincher to his sales talk: "I can give you a set of guaranteed maps to show topography as well as all your forest types for just one-third the cost of conventional ground maps. If they're not completely satisfactory, you don't have to pay for them."

It was a bold pledge, but convincing. Cost was something these men understood—and speed was an absolute essential. Some timber owners were willing to take a chance.

Today, over a year later, with 500 thousand acres satisfactorily mapped for such conservative firms as Long-Bell Lumber Company, Crown-Zellerbach Corporation, Valsetz Lumber Company and others, Wood's aerial cruising and mapping system is the talk of timber row.

Draftsman Paul Liniger puts finishing touches on forest-type map

It threatens to revolutionize the antiquated methods of surveying and cruising forests which have not changed basically since the days of the pioneer "land-looker" in the Maine and Michigan pineries.

The discovery of this controlled aerial forest mapping technique is another Horatio Alger story of American ingenuity and success. In 1946, Wood quit a good-paying forest engineer job in Oregon to establish his own consulting forestry business. Getting a toe-hold was tough and heartbreaking disappointments came every day.

It was during one of those bitter moments when defeat seemed certain that the plan for aerial forest mapping took form.

For five back-breaking days late that summer Kendall Wood and his assistant, Spencer Gross, labored in the unmapped wilderness of Blowout Creek in Oregon's eastern Linn County, laying out a logging road survey. Then trouble struck. The tediously surveyed route ran head-on into a solid rock cliff, which sealed off a blind canyon they had been following.

The area was rough and heavily timbered. It had never been mapped. Trees hid obstructions until you were on top of them. Dense, jungle growth

was almost insurmountable. From the ground these young engineers were like blind mice and only by painful, determined slogging along in mountainous rocky country could they make headway. Luck was too much of a factor in surveying in a wild land where one struggled constantly with very effective wilderness roadblocks and obstacle courses devilishly placed by nature. Wood and Gross leaned against the impassable rock face and contemplated their ill luck.

"Ken," said Gross, who had recently been released from the U. S. Army Engineers, "we could do this job much easier, surer and faster with aerial maps. Then we'd know where we're going. Aerial photographs, like the Army used extensively during the war, can be viewed through a stereoscope device called a Multiplex Aero Projector and the hills, mountains, streams, rock outcroppings and even the trees walk right off the photograph in third dimension. This factual data can be translated into maps that give all sorts of information about the terrain and the cover on it."

"This hunk of rock," Gross shook his fist at the enemy, "would stand out like a block of seed trees in a logged tree farm area on those maps. We'd know where not to go and we could tell exactly where our ground lines should be run. In a plane at 6,000 feet a camera can shoot pictures of an entire section in twenty-four seconds. Think how long we've been groping down here like a couple of moles, butting our heads into rock cliffs."

That did it. Within thirty days Kendall Wood, ten years out of the University of Michigan school of forestry, had explored the Multiplex mapping system. Armed with fresh-found enthusiasm, $1,000 cash and revolutionary ideas, he checked with Army authorities, talked convincingly with prospective customers, and successfully maneuvered a Portland bank into financing him.

Then came more trouble. Wood found that Bausch and Lomb, working with the Army Map Service and U. S. Geological Survey, had improved and refined the Multiplex Aero Projector, first perfected by Zeiss in Germany about 1930. But Bausch and Lomb at first would give Wood no encouragement; they were months behind on production. Orders, mostly from government, were on file to absorb production for eighteen months.

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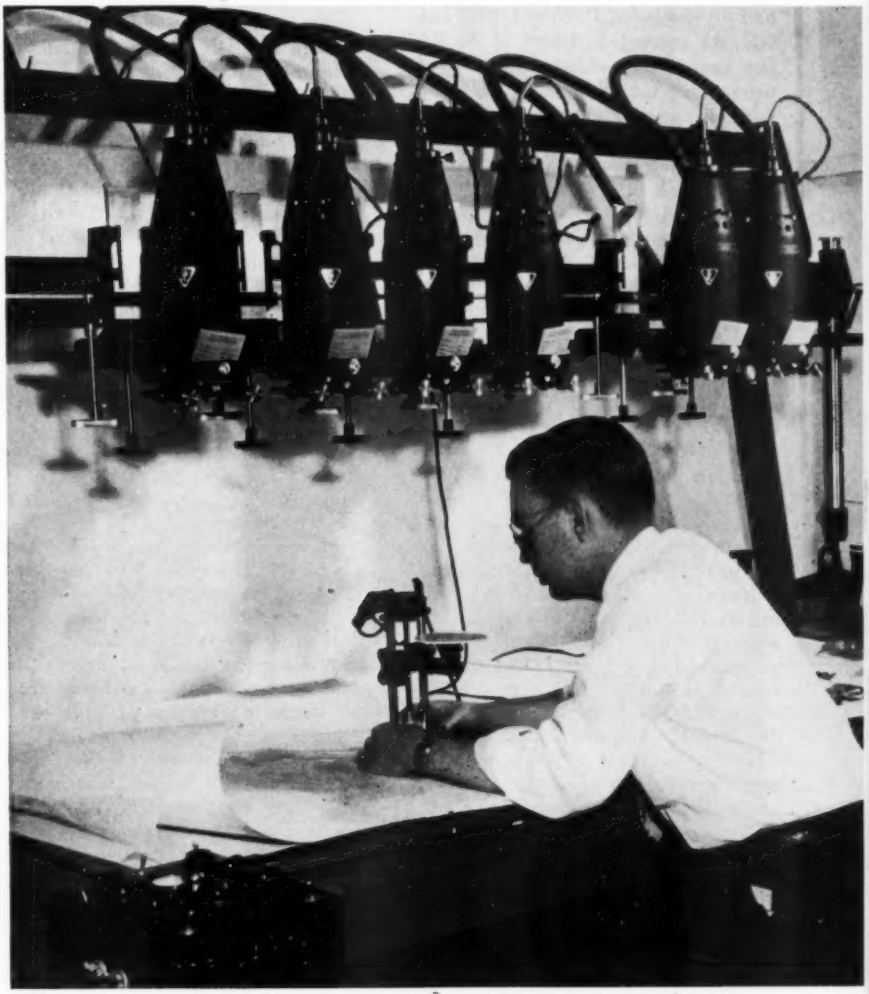


Above, making a cruise with desk stereoscope to estimate cubic volume of timber. Below, Ex-Sergeant Fehr demonstrates use of movable tracing table

WOODLAND CO-OP

How a war veteran sold the idea of cooperative enterprise to woodland owners in Pennsylvania's Brandywine Valley

By WALTER RUDOLPH

LATE last August a group of farmers, all small woodland owners and members of Woodland Products, Inc., met in a modern sawmill near Downingtown, Pennsylvania. One of the heart-warming moments of the meeting came when the treasurer, John F. Romig, reported:

"We've done pretty well in our second year of cooperative enterprise—and prospects for 1949 look even better. As against a deficit of $1,468 last year, June to June, we show a net income for 1948 of $10,724. In addition, we now have fixed assets of land, buildings, machinery and equipment and miscellaneous items valued at $37,689."

It was a happy occasion for everyone present. And particularly for Clayton M. Hoff, executive vice-president of the Brandywine Valley Association, with headquarters at West Chester, for interwoven in the background of the Woodland Products, Inc. "success story" is the energetic approach of this association to local land management and good forest practices.

The Brandywine Valley Association represents a group of citizens working for the betterment of communities in the Brandywine Creek drainage area, around 330 square miles with a population of approximately 180,000. Naturally, the health, welfare and prosperity of these people depend to a large extent on the natural resources of this valley, which extends west of Philadelphia down to Wilmington, Delaware.

The association provides a common meeting ground upon which ideas and information can be exchanged and progress measured. More specifically, it encourages and aids the people of the Brandywine Valley to reduce soil erosion, to lessen flood and drought damage, to decrease stream pollution, to improve and protect existing woodland, and to reforest marginal lands and preserve wildlife and natural beauty.

And to all its efforts it tags this emphatic statement — it is not concerned with political or special interests. Its support comes from voluntary contributions and membership dues. All preferences, opinions and ideas of members are carefully analyzed and directed toward the greatest benefit of all—farmers, town residents, industrialists and sportsmen.

Back in 1945, the cooperative was little more than an idea in the minds of interested farmers around West Chester and J. Howard Mendenhall, just out of the Army and looking around for a job. A forestry graduate of Pennsylvania State College, Mendenhall had read of the Otsego Forest Products Cooperative, in Cooperstown, New York, and the fundamental idea appealed to him.

He discussed it with officials of the Pennsylvania Forestry Association, particularly with its president, H. Gleason Mattoon, and recounted the experiences of farmers around his native West Chester.

"I learned first of all," he told them, "that the farmer with, say, from five to ten acres of woodland was practically ignored by large logging and sawmill enterprises. And when a small woodlot was contracted to be cut, the operator moved through it in a fashion similar to that of harvesting wheat. Little concern was shown for the future of the woods. And the price paid was lower than for larger lots because of 'high overhead.'"

Mattoon recommended that Mendenhall talk over the cooperative idea with Noah Hershey, president of the Coatesville Egg Auction, a cooperative that in its own field had grown to a $250,000 enterprise in eleven years. In November of 1945, these men got together with another interested citizen, Paul Coates, a progressive farmer and grange member.

At this meeting Mendenhall was advised to do more research on the cooperative idea in connection with woodlot "harvesting." But by now the Brandywine Valley Association had warmed to the idea and asked him to become a staff member of the growing, influential organization.

"Join up with the association," Hoff said in effect, "and continue with your work to get this cooperative going—you'll be on our payroll and everyone concerned in the valley will benefit."

Mendenhall joined and worked harder than ever on the cooperative idea. He drew up three recommendations from which the knot of cooperative-minded men might choose:

1. Logs and cordwood might be pooled by farmers and marketed through a central agency on a commission basis to sawmills, furniture plants and other concerns, or sold as firewood and pulpwood. No ownership of equipment was involved.

2. Farmers could own and operate an ultra-portable sawmill that would move around and set down on small woodlots to speed logging.

3. Farmers could own a permanently located sawmill and operate it for their sole benefit, doing custom sawing (badly needed by the farmers), and owner-members could work for woodlot conservation and the most profitable utilization of their trees.

Of the three suggestions, the last seemed most promising and Mendenhall was asked to draw up a prospectus setting forth information on equipment needed, costs and general operational possibilities.

He sought aid from many sources. From the Northeastern Forest Experiment Station at Philadelphia, Fred Simmons offered counsel; A. C. McIntyre of the U. S. Soil Conservation Service was also quite helpful; and John Tyler, farm forester in Norristown, gave Mendenhall basic data and information on existing sawmills, competition potentialities, acreage, and condition of the woods.

Mendenhall took his information to a meeting late in the year attended by a growing number of interested citizens. Fred Coates, mechanically-minded brother of Paul and experienced in sawmill operation, attended and said he wanted to sell his farm and offer his services as the cooperative sawmill operator "when and if."

The meeting progressed to the point where a temporary organization was set up and the name, Chester-Delaware Woodland Owners Co-op Association, given the group.

Early in 1946 a handful of charter members of the hopeful cooperative dug deep into their pockets to finance their first acquisitions, including a two-man, gasoline-powered chain saw. Research had revealed that about $50,000 would have to be raised to put the enterprise on a sound footing — but members were eager to be about the actual cutting of woodlands.

Several cuttings were made, working with a green crew, and in March still more organization was undertaken. An executive committee was approved and directors and officers elected. Finally, an application was made to the state for a charter.

Then the jolt came. Pennsylvania, under existing laws, couldn't grant a charter to a cooperative interested in woodland management and marketing. At the same time, further pieces of sawmill equipment needed were proving to be "unavailable," as much machinery was after the war. And to top it off, the first cuttings were not earning money.

At this dark moment, a ray of cheer came from the Pennsylvania Farm Bureau, by now quite interested in the cooperative's development. It advised that the group could organize under a corporation title, and still retain cooperative by-laws. Thus a new name, Woodland Products, Inc., came into being and again the organization forged ahead.

The charter granted by the state allowed issuance of 1,250 shares of common and an equal number of preferred stock at $10 a share. The charter, further, stipulated the right to:

". . . manufacture, buy, sell and deal in, either for itself or as an agent for others, timber, lumber, millwork and other building materials of every kind and description, and in the development of woodlands and the resulting by-products of forests; and to engage in the buying and selling of machinery and equipment necessary and incidental to timbering, lumbering and millwork and to perform any and all things necessary and incidental to such business."

Membership swelled in the co-op. Stock investments grew. More equipment was bought and a second-hand sawmill was acquired and temporarily set up on an eight-acre plot of ground purchased near Downingtown. The sawmill was in excellent condition and large enough to handle the largest logs in the vicinity.

The acreage was a wise buy, being located on the main line of the Pennsylvania Railroad, beside a surfaced road and having access readily to electric lines for power. It also boasted an alfalfa crop, a sideline cash income for the fledgling business.

By late April, 1947, the first logs had been cut, and in the following month 100 thousand board feet of lumber were sawed out in spite of temporary shutdowns and the training of green millworkers. Co-op investments in June amounted to nearly $12,000.

Custom work, as had been foreseen, was the biggest need of co-op members whose farms were construction-hungry. In August of that year the first annual auditing of the co-op's books showed operations to be "in the red," but there had been only two months of actual mill operation.

The co-op had a truck, caterpillar tractor, chain saw, a fifty-six-inch saw with a thirty-foot carriage and fifty-two-foot blockheads, a cut-off saw, slab elevator and edger, all electrically-powered, and sundry other tools incidental to sawmill operation. At the first annual meeting it was voted to erect a permanent sawmill building.

A concrete block structure, 140 feet long, with an aluminum sheeting roof, was put up during the past year. And another truck was acquired as operations gradually moved into the "black" side of the books. Some seventy-five members of the co-op now reap these benefits:

1. Their trees are marked for cutting, and logging is supervised by the co-op's forester, Sam James, who pays special attention to sustaining the individual woodlot's yield, stipulates weeding if necessary and tries to improve the stand.

2. A reliable contractor is engaged to do the cutting, skidding and hauling of logs, at a reasonable rate, if the farmer so desires.

3. Custom sawing, according to a member's specifications, is done at the sawmill. The charge for this—at this writing—is $20 a 1,000 board feet, payable in cash or logs.

4. Trees standing in a co-op woodlot can be paid for in cash equivalent to ninety-five percent of current prices, the remaining five percent payable in common stock or in cash for amounts less than $10; the same arrangement applies to logs delivered at the sawmill; members may purchase additional stock, if desired, with logs in lieu of cash.

5. Co-op products, such as lumber, sawdust and slabwood, are sold to members at reasonable prices, or to private buyers; a continuous search for new markets is maintained.

There is plenty of room for expansion of facilities, and nearing the blueprint stage are plans for a drying kiln, planing mill, fence post and timber treating equipment.

Truly, the continuing success of Woodland Products, Inc., will prove beneficial to all concerned and a boon to anyone interested in good forestry practices and the conservation of the country's natural resources.

When members of Woodland Products, Inc., all small woodland owners, met in August, there was good news — they were out of the red and making money

Walter Rudolph

For Distinguished Service . . .

(*From page* 501)

resulted the Capper Pig and Calf and Poultry Clubs—a Kansas farm-youth movement from which stemmed the 4-H Clubs of today. The 1,800,000 members of 4-H Clubs throughout the nation, and the millions of 4-H Club alumni, now scattered throughout the world, have Senator Capper to thank, in no small measure, for the training and inspiration received in their most formative years. For, it is the Capper-Ketcham Act of 1928 which insures annual appropriation to support the activities of the 4-H organization. Through these appropriations, the scope of 4-H activity has grown to include all products of the farm, including the farm forest. Ever since their founding, Senator Capper has been a member of the national board of directors of the 4-H Clubs—the avenue by which conservation messages and conservation activities — learning by doing — are brought to the farm youth of the nation.

"His interest in human conservation is manifest also in the Capper Foundation for Crippled Children, by his serving on the board of governors of the National Home for Orphan Children, and his services as a member of the National Council of the Boy Scouts of America and the national board of the American Red Cross.

"Among foresters and other students of land management, the Capper Report of 1919 is a monumental work of reference on the forest situation in this country. Published as a Senate Document in 1920 it was the most thorough study of timber supply and timber depletion made up to that time. It formed the basis for much of forestry's advancement—both on public and private lands. Other far-reaching surveys of our forest wealth and its dissipation have been made since that time, but invariably they turn to the Capper Report as a point of reference.

"Among agriculturists the Capper-Volstead Acts of 1922 and 1926, making possible the successful operation of farmer co-operatives and the Capper-Tincher Act of 1922, to regulate trading in futures on commodity exchanges, are milestones in American farm legislation.

"But most of Arthur Capper's contributions to conservation are those which do not bear his name. In the Congress his ardent support has been given to constructive legislation, regardless of authorship and regardless of partisan politics. He supported and rallied support for the forestry bills of the late Senator McNary and especially for the Clarke-McNary Act which is the basis for federal-state cooperation in meeting national forestry problems. The basic Flood Control Act of 1926 and the Shelterbelt Program—one under a Republican administration, the other under a Democratic regime—received his unqualified support. To Arthur Capper, the welfare of the people and the land transcended the borders of party lines.

"His devotion to his duty—a public duty—is emphasized by his responding to all but ten of 2,000 senatorial roll calls during his thirty years on Capitol Hill.

"Ever the stimulator of individual initiative and a businessman with faith in himself and a willingness to work and work hard, he has encouraged others to stand on their own two feet. Nevertheless he has recognized the responsibility of government to participate actively in the solution of problems for the good of the nation as a whole. For this reason he has sought to implement and improve the management of national and state forests while endorsing measures designed to help private landowners to carry their burdens on their own shoulders.

"His statement in regard to national responsibility in flood control has been his guiding principle towards the solution of national conservation problems. 'Flood control,' he told the Congress, 'is a national problem which should be treated in a broad, comprehensive manner, with the government of the United States assuming full and complete authority and responsibility for it, and after developing a practical plan, to carry that plan into execution at the expense of the nation.'

"As member and chairman of the important Senate Committee on Agriculture, Arthur Capper has led his colleagues in a quiet and persistent drive for better land management, for conserving and improving the productiveness of our soil, water and forests. It is unfortunate that his name is not indelibly linked with all the conservation measures in which he played a vital part. But doubtless the senator in his modesty would rather not have it that way. A Kansan who knows him well, Harry W. Colmery, past national commander of The American Legion, stated on the occasion of Arthur Capper's 83rd birthday, 'He will never choke himself to death burning his own incense.'

"However, The American Forestry Association feels it would be remiss in its obligation to the American people if it were not to take this occasion to burn a bit of incense in Senator Capper's honor—if it were not to recall his many contributions to the goals toward which the Association has been working these past seventy-three years. We have been proud to have had Arthur Capper as a member of the Association for many years in support of a program for American forestry based upon the recognition and stimulation of private initiative and the recognition and redemption of public responsibilities in the wise use of land, water and forests.

"We feel that his retirement from the Senate of the United States this year as the second oldest member and with the longest record of any Republican in that body is a distinct loss to the conservation forces of the nation. However, we cannot help but believe that a man of Arthur Capper's stature, his fairness, and sincere convictions has passed along to his junior colleagues a heritage and tradition which will long have its influence in the legislative halls."

In accepting the award, Senator Capper stated:

"I shall treasure the plaque, and the honor bestowed upon me.

"I find it most interesting, in an objective spirit, that this Conservation Award from The American Forestry Association should come to a citizen of the state of Kansas, which was widely advertised by a James A. Farley some twelve years ago as a 'typical prairie state.'

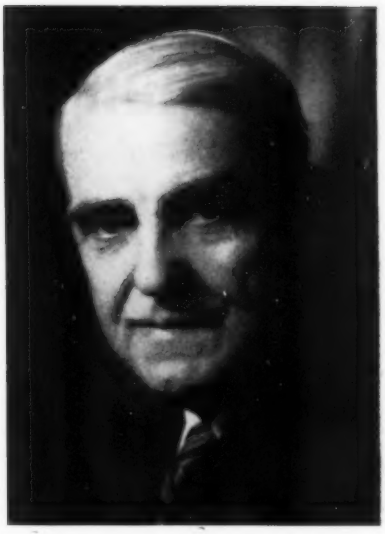
"Of course, that is what Kansas is, a typical prairie state, whose people know the importance and the need for conservation of America's land, water and forests. It is just a little beyond my imagination to think of Kansas as a forest state. But as the years go by I can vision more and more trees grown in Kansas, both for pleasure and for profit, and in the interest of land conservation. I am under the impression that there probably are more trees in Kansas today than there were when Kansas was admitted to the Union in 1861.

"On behalf of all of our people who have come to realize that conservation of our land, water and forests is vital to the existence of our civilization, and on behalf of all Americans of today and of the years to come, I wish to extend thanks to

(*Turn to page* 516)

The Board of Directors of The American Forestry Association announces the election of five honorary members in recognition of "distinguished service in the cause of conservation"

Henry S. Graves of Connecticut



Senator Arthur Capper of Kansas

Robert B. Goodman of Wisconsin

Tom Wallace of Kentucky

J. N. Darling of Iowa

AFA ELECTS HONORARY MEMBERS

Election of five distinguished American conservationists to honorary membership in The American Forestry Association was announced by the Board of Directors meeting at Chattanooga, Tennessee, on October 7. Only six men and women have been similarly honored.

Named as honorary members "for distinguished service in the cause of conservation" were Henry S. Graves of New Haven, Connecticut; Senator Arthur Capper of Topeka, Kansas; Tom Wallace of Louisville, Kentucky; J. N. "Ding" Darling of Des Moines, Iowa; and Robert B. Goodman of Marinette, Wisconsin.

Mr. Graves, dean emeritus of the Yale School of Forestry, former chief of the U. S. Forest Service and twice president of The American Forestry Association, was cited as "a conspicuous leader in the development of forestry in this country." Awarded the Sir William Schlich forestry medal in 1944 for outstanding service, he more recently was honored by the French Government for his efforts to form a forestry unit within the framework of the United Nations.

Senator Capper was cited for "unselfishly devoting his great ability" throughout his long period of public service as governor of Kansas and in the United States Senate "to the building up of our soils and forests, the control of erosion and floods, and to the development of the youth of

(*Turn to page* 518)

Ranger To The Rescue!

With more and more amateur mountain climbers becoming stranded, the National Park Service has set up a rescue training school for rangers

By J. LEONARD VOLZ

Photos by Stewart Hertz, Seattle Post Intelligencer

An expert gives students demonstration of rappelling

A NEW problem is confronting the National Park Service—that of rescuing an increasing number of visitors who become stranded on precipitous cliffs and rugged mountainsides. So serious, in fact, has the situation become that park officials in September conducted for the first time a mountain climbing and rescue training school for park rangers.

Attended by rangers from three national park regions, and with representatives on hand as observers from the U. S. Forest Service, the National Ski Patrol, the Armed Services Rescue Squads and local mountaineering organizations, classes were held in rugged Mt. Rainier National Park in Washington.

Conducted along practical lines, the main objective of the school was the training of key men to return to various parks and give intensive training to their own personnel. All phases of mountain climbing technique were taken up and casualty evacuation was practiced on both rock and ice, with students taught to improvise equipment when necessary.

A thorough study of all types of rescue equipment was made and accident prevention methods and regulations concerning mountain climbing in national parks were given a close scrutiny. In this connection, representatives of local mountaineering clubs provided valuable aid in outlining their training activities, rescue plans and general organization.

It was felt that one of the major accomplishments of the school was to cement closer relations between park personnel and the energetic members of mountaineering clubs—a fact that in itself should go far to insure the safety of future park visitors.

The purpose of the school was brought home with sudden clarity during one session when a message reached Chief Ranger Albert Rose of Mount Rainier, that a young girl was lost somewhere in the vicinity of the Whitman or Ohanapecosh glaciers, on the southeast side of Mount Rainier.

Immediately, men of the Mount Rainier ranger staff were dispatched to organize a search. The rest of the school was alerted.

The girl was found the next day tired, cold and hungry but otherwise uninjured. The school reached its conclusion without further incident, but this injection of a live case added an unscheduled reality to the curriculum and gave impetus to the entire training program.

National Park Service officials report they are well satisfied with the outcome of their first mountain climbing school and stress that the payoff will be in additional protection for increasing numbers of park visitors. This summer 29,608,318 people visited national parks and monuments, a new record. That is why Park Service officials emphasize the need for a comprehensive program of development and improvement for many of the areas as well as additional personnel for protection purposes.

Climbing equipment gets close inspection from students

managing your WOODLANDS

A page dedicated to the management of woodlands, large and small — practical suggestions in procedure and technique and in the solution of problems on the ground.

What is your problem? American Forests will assist you in finding an answer. Address queries to The Woodlands Editor.

PINES CAN'T BE BEAT

When an Alabama farmer found they couldn't be eliminated from his pasture, he became the owner of a paying forest

Pines certainly grow in Alabama, if they are given half a chance. In fact, as Emmett C. Zeigler found out, they sometimes grow in spite of all efforts to eradicate them. At first, Zeigler didn't like the idea, but now that he has finally let the pines have their way, he has discovered a new source of income — a better-paying source than the pasture land he originally tried to establish.

The story of Zeigler's struggle with the pines goes back to before World War I. He and his brother had consistently beaten back the encroaching pines from a forty-acre pasture on their farm near Fort Deposit. It was excellent land for grass. But it was also excellent for pines.

Finally, on Armistice Day in 1918, the Zeiglers cut off all the young pines worthy of an ax-swing and, taking advantage of dry weather, set fire to the forty, killing off the remaining seedlings. There has been no fire in the area since that time—and the pines came back.

From all indications, a good seed year occurred in 1921 or 1922, and the scattered old trees in or near the pasture must have rained down plenty of viable seed. For in 1948, just thirty years later, the forty acres of "pasture" held a fast-growing stand of timber — sawtimber, poles and pulpwood.

In the meantime, the Zeiglers had abandoned the thought of pasture on this forty and were developing other acreage which yielded readily to their efforts.

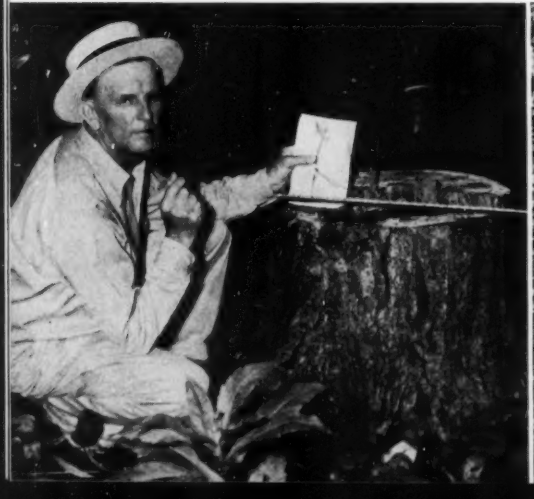
When Emmett Zeigler called in Farm Forester Douglas Sellers of the state extension service at Greenville, he still wasn't sure that the pines were worth much. At any rate, it wouldn't cost a cent to get Sellers' opinion. Sellers noted the unusual vigor of the stand and immediately saw that a conservative harvest should be made to keep the timber growing at maximum rates.

In two days Sellers and Zeigler selected, marked and estimated the volumes of the trees which should be cut. In all, 84,000 board feet of sawlogs and 110 cords of pulpwood were harvested and marketed. This came from the old trees which had seeded in the forty—an average of two trees an acre — and the crowded, stunted and limby trees of the new stand. In fact, what Sellers had done was to select for cutting those trees "least likely to succeed" in the future development of the woodland. Disregarding the value of the trees left after the cutting operations, the woodland had produced in the thirty-year period an annual yield of $1.75 an acre.

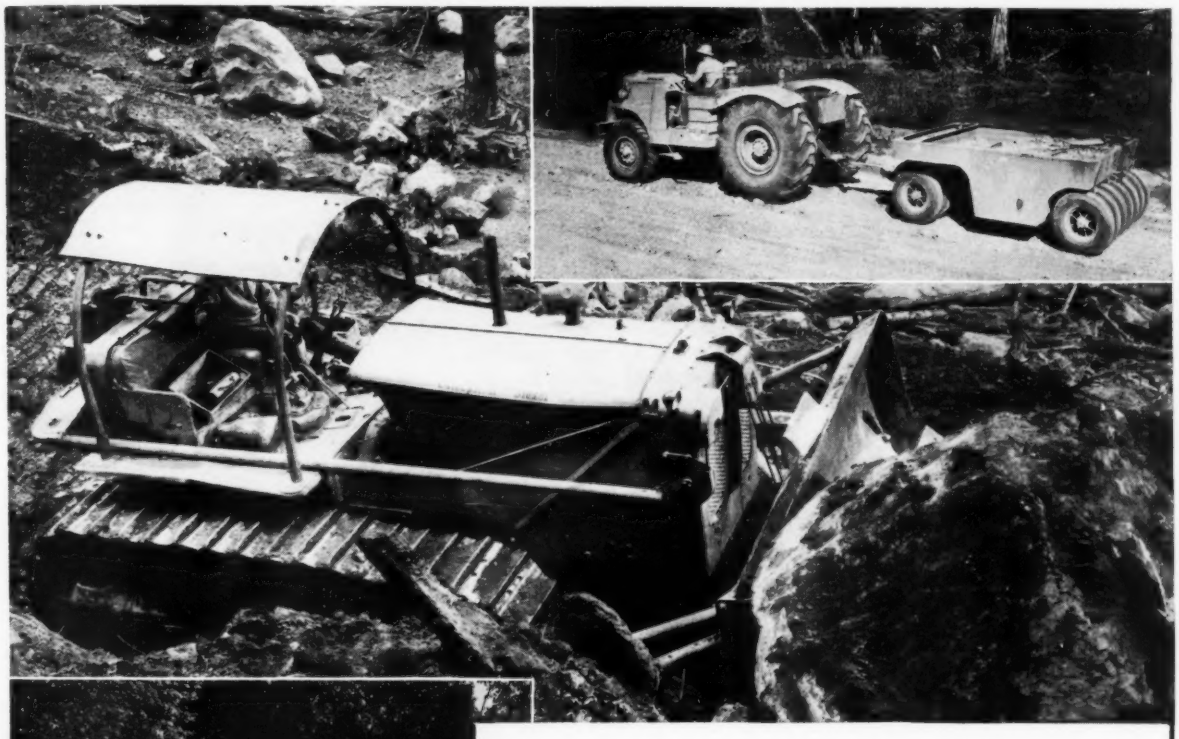
When the cutting had been completed, Sellers and another forester, Rudolph Stahelin of the U. S. Forest Service, estimated that the remaining stand, all thrifty young growth, would produce wood annually at the rate of 600 to 800 board feet an acre. This rate is expected to continue for ten years, when another conservative cutting will be made. At current prices for stumpage, the better-stocked areas should yield an annual income of at least $10 an acre between now and the next cut.

The pines won out in their struggle for existence, but now Mr. Zeigler feels that he won also. He lost a pasture, but gained a woodland which is bringing in more net income than he ever expected to realize from the pasture land in the first place.

Twenty-seven years ago this stump was a seedling like the one being held



Trees for the next harvest, ten years away, will grow more rapidly following the first conservative cutting



ALL-"CATERPILLAR" EQUIPMENT BUILDS ALL-WEATHER ROAD

THESE pictures show only a portion of the equipment used and the jobs being done on a project in the Little River District of Oregon. An all-"Caterpillar" fleet, consisting of 4 D8 Tractors with No. 8S Bulldozers, several D8s with scrapers, a DW10 (wheel-type) Tractor, and a No. 12 Motor Grader, is at work building a ten-mile timber-access road for the U. S. Forest Service.

The tractor-bulldozer units carve out the right-of-way. The tractor-scraper units make the fills. The motor grader spreads the surfacing material. The DW10, with weighted roller, does the compacting.

Thus, this all-"Caterpillar" outfit builds an all-weather road that is wide, fast, safe—and inexpensive. And it is just as capable in getting logs out after the roads are built.

All-"Caterpillar" equipment is easy to maintain too. Replacement parts, inspection and repair service is simplified through a single dealer organization which loggers, contractors and Foresters widely regard as the most complete and efficient of its kind.

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NEWS IN REVIEW

Stanley Fontanna of Michigan has been elected president and Nelson Rogers of Oregon, vice-president of the Association of State Foresters. Other new officers are George Dean of Virginia, secretary-treasurer, and Charles Flory of South Carolina, and J. Whitney Floyd of Utah, members of the executive committee.

Fontanna

At their annual meeting in September, the state foresters endorsed the principles of bills introduced into the 80th Congress for raising funds, under the Clarke-McNary Act, to $20,000,000 annually for cooperative fire control work and to $2,250,000 annually for reforestation.

The association also drew up a suggested form for a memorandum of understanding between state foresters' organizations and the state extension services. Purpose of the memorandum is to promote closer coordination in education and extension and demonstration work among forest landowners.

• • • •

Visitors to national parks, national monuments and other areas administered by the National Park Service totaled 29,608,318 this summer, an increase of seventeen percent compared to the record established last year. What areas had the most visitors? The Texoma Recreational Area in Texas and Oklahoma had the most—2,397,508. The Lake Mead Recreational Area in Arizona and Nevada was second with 1,607,422 visitors; The Lincoln Memorial in Washington, D. C., was third with 1,504,677 visitors; and Great Smoky Mountains National Park in North Carolina and Tennessee was fourth with 1,468,636. Fifth, sixth and seventh places go to the Blue Ridge Parkway in Virginia and North Carolina which had 1,433,290 visitors despite the fact it is only partially completed.

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Federal predatory-animal hunters are moving traps, guns and airplanes into the Territory of Alaska. Dorr D. Green, chief of the U. S. Fish and Wildlife Service's Branch of Predator and Rodent Control, in announcing this large-scale operation, said targets will be bands of wolves and coyotes which have been decimating the Territory's reindeer, mountain sheep, moose, caribou and fur animals.

• • • •

Christmas tree operators have been notified by the U. S. Department of Agriculture of recent changes made in federal requirements governing shipment of cut trees from areas in eastern New York state and New England infested with the gypsy moth. The department now requires that fumigation of cut trees must be done in boxcars of steel construction or in perfectly tight sheds. Dosage requirements of the fumigating gas also have been increased. Prior to these changes, any reasonably tight boxcar or shed was considered satisfactory as a fumigation chamber. More than 320 thousand cut Christmas trees were certified for shipment from this region in 1947.

• • • •

The most intensive aerial study ever made on the Far North's waterfowl breeding grounds was conducted this summer in Canada's Northwest Territories and on eastern Alaska's Arctic coastline, the U. S. Fish and Wildlife Service has disclosed. Service flyway biologist Robert H. Smith, accompanied by the National Audubon Society's Robert P. Allen, flew 14,272 miles over tundra, woodlands and delta breeding grounds—much of it uncharted territory. In surveying almost 42,200 square miles, the biologists found waterfowl populations that compared favorably with those in southern Canada. The greater percentage of the ducks observed, however, were non-game birds — the slow-flying or fish-eating scoters, old squaws and king elders.

• • • •

Enlargement of the Western Pine Association's forestry services into the field of entomology, disease control and fire protection has been announced by Ernest L. Kolbe, chief forester. Dale C. Prentice, member of the U. S. Bureau of Entomology and Plant Quarantine staff, joined the association November 1 to head the new service. As a forest protection engineer, Prentice will advise on insect risk ratings of timber, salvage cuttings and blister rust and fire control measures. He will work with company tree markers in the eleven-state Western Pine region.

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With the setting of enough pine seedlings to reach around the world one and a half times, Louisiana should reach an all-time high in reforestation activity during the 1948-49 planting season, according to J. Walter Myers, Jr., forester for the Illinois Central Railroad. An estimated thirty-five to forty million pine seedlings have been raised in various state, federal and private nurseries and are scheduled to be transplanted soon on barren forest acres throughout Louisiana.

• • • •

What may be a solution to the customary forest-fire ban on woods hunting and fishing is being tried by Oregon. Instead of closing woodlands to hunters during the fall fire season, the state has passed a regulation requiring that all hunters carry tools for fire fighting in their automobiles. Cars must be equipped with a bucket, ax and shovel.

• • • •

The executive board of the Pennsylvania Forestry Association has announced the appointment of Samuel A. Custer, of Lansdale, Pennsylvania, as executive secretary of the association. A graduate of the Pennsylvania State College Forestry School, Mr. Custer has been engaged in forestry work since 1942, with the exception of a period of service with the Air Corps during the war. Mr. Custer resigned as forester for the Interstate Commission on the Delaware River Basin to accept his new position. Previously he was associated with the Woodland Division of the West Virginia Pulp and Paper Company at Summerville, South Carolina.

Custer

• • • •

The U. S. Department of Agriculture reports that televison viewers on the network of the Columbia Broadcasting System have been getting first-hand information on such vital economic matters as soil conservation, flood control, reforestation and crop rotation on the Wednesday afternoon CBS-TV series entitled "The Earth We Live By," a program that utilized U.S.D.A.-produced films.

Maine—One Year Later

(*From page* 495)

useful up to a point, it still remained for the forest commisioner's staff to sit down and draw up a workable program.

The governor did suggest that in the campaign to bolster fire protection in the state that authorities not lose sight of the fact that legislation to create a department of public safety under a safety director may be introduced in January. Ten prominent Maine attorneys who are studying this question have not filed a report as yet. They may recommend that protective agencies such as fire control and state police be brought under one roof with the safety director given broad powers.

While a coolness to this proposal was noted in some quarters, the governor said such a plan would receive considerable public support. Conceivably, such a plan could strengthen the hand of the forest commissioner in carrying out a broad-gauge program—might provide one more step in forging a tight link to insure the public safety in peace or in war.

Since the 1947 fires, considerable criticism, I was told, has been leveled at one group in the organized towns who, up to then, had been the principal bulwark of the communities against property loss from forest fires. These men are the town fire chiefs.

Some of the criticism has been that in the absence of any central, coordinating authority, fire line operations have often been confused and unsystematic when flames race across town boundary lines; that with notable exceptions, chiefs who show tactical skill and initiative in attacking fire in buildings fail to display the same aggressiveness with woods fires; that departments are too hose and pumper conscious and do not place sufficient reliance on tools and heavy equipment; that available manpower is not always utilized efficiently; that crews do not hit fires promptly; that they do not stay with them at night and burn out edges; and finally the most consistent criticism of all, that town departments are weak on mop-up operations and that patrolling is often ineffective if not non-existent.

One of the more recent examples of criticism brought to the attention of the public in September was an assertion by A. G. Randall, assistant professor of forestry at the University of Maine, that the Rockland fire department and "numerous amateur helpers" played "tit-for-tat with a forest fire for over six days."

Many town fire chiefs, I found, admit the validity of some of these criticisms and agree that forest fires, by their very nature, require strong, centralized control. Ray Burbank, fire chief, first selectman and fire warden of Goodwin's Mills, York County, stressed equipment, communications, strong lines of authority and disregard of town boundary lines as the most pressing needs. In discussing the problem while sitting by the pot-bellied chunk stove in his garage, Chief Burbank said he would not be loath to surrender a few of his prerogatives to obtain a more closely knit setup—not after facing what he labeled "that thing" coming down the road last fall "and me with a single pumper containing 280 gallons of water."

Maine fire chiefs will not soon forget their dogged fight against last fall's holocaust, Chief Burbank said grimly. Fighting blindly with few if any communications, chiefs seldom knew what was going on any place other than their own immediate vicinities. When they backed up before the fire's onslaught, the hill at their backs would sometimes break out in an inferno of flame from an unsuspected fire approaching from another sector. Swarms of volunteers flooded the fire lines. Some were good and some were terrible. The poor ones threw up road blocks where none were needed, failed to stick to their posts when definite missions were assigned.

A hundred untrained men often failed to do what twenty trained men could have accomplished. Equipment was lost through negligence. In one case firemen reportedly got drunk. One relief caravan assigned to a chief rolled right through his town with sirens screaming unaware that it had reached its destination. Fighting hours on end, weary chiefs were sometimes faced with the unhappy choice of deciding whether to concentrate their meager equipment on a town or the farm homes near the town. And always they were conscious of the lack of an overall plan that would give all departments an overall purpose.

But while many town fire chiefs and selectmen agree that some form of central control is required, they are not in full accord that the Maine Forest Service is necessarily the proper agency to handle the job. Curtis Allen, veteran fire chief of the Sanford Fire Department, was one man who said he was not convinced that the Forest Service should take over.

"The wardens, now town-appointed, are nice fellows but they haven't had the experience and don't have the manpower," Allen said, looking squarely at the situation as it is now. "When the fire bell clangs at the station house the boys will turn out and fight, often without pay, but my observation has been that the wardens have difficulty getting crews and often can't hold the men when they do get them.

"As a matter of fact, the Maine Fire Chiefs Association is drawing up its own program," Allen revealed. "The plan will call for a fire administrator for Maine and assistant administrators in the central, northern and southern sectors of the state and one deputy administrator in each county. These administrators and their deputies, along with equipment pools, should provide necessary coordination. And it must be remembered that town departments have more equipment today than they had last year and have entered into working agreements with neighboring towns."

Tom Scott, Alfred fire chief and selectman, expressed fear that state control by the Forest Service would gradually deteriorate into a political proposition. "It would start out with the forestry boys at the helm all right, but after that the politicians would get in the saddle and that wouldn't be good," he said. A strong Civil Service program for the state might be one means of counteracting such a contingency, he added.

"My idea is to let the chiefs fight the fires," Scott said, "They have the manpower. Then let the wardens take over after the fires are knocked down and patrol them. Also, let the state provide heavy equipment and planes —and most important, have the state responsible for keeping permanent fire lanes open with their bulldozers. That would be a real service.

"I'll admit some bad situations have developed between the towns in the past," he said seriously, "but it is my belief that our salvation lies with strong town fire departments. They are the only thing we really have when all is said and done."

The attitude of such men as Allen and Scott reflects that of a number of

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tough-minded fire chiefs. They point out that while there may be plans and more plans, in the final analysis theirs is the responsibility. They are going to have to be shown before they will bow to any central authority unless they are convinced it will fill the bill. To them, the forest commissioner's unannounced plan is merely something on paper as yet and, in the last year, many Maine people have become somewhat comtemptuous of what they term "more paper work."

Nor are the chiefs completely convinced that state appointed wardens will solve the problem. They realize that in the past the wardens have had practically no authority. Until proved otherwise, some chiefs will question the ability of even state-appointed wardens to "get the men out." In this connection, one town selectman, who said he is convinced forest fire control is absolutely a state job, suggested that showing of motion pictures of state warden systems working effectively in other states might prove beneficial in Maine communities. "It's been done elsewhere, why not here?" he asked.

L. L. Clark, lumberman of Clark's Mills, whose firm has salvaged twenty million of the 150 million board feet of lumber in the state from burned over areas, said that with some exceptions the fire chiefs recognize the need for strong state authority in fire fighting and predicted that the authority of state wardens would be recognized if the state took a strong stand.

"The general attitude for central control is good," Clark said. "At this year's Farm and Home Week program, forest protection was the biggest gun of all and the state foresters made a good showing. In my opinion, the groundwork has been laid and the people are ready for any sensible plan. I sometimes think the public is way ahead of many of the officials on this thing."

Edward Corney, general manager of the Deering Lumber Company at Biddeford, commented, "By nature I'm not in favor of centralization, but I do believe that a coordinated, centrally-controlled fire plan for the state is the answer in this particular instance. There just doesn't seem to be any other way. The state is faced with a grave responsibility."

Professor Randall was one of a number who urged that there be no question of "encouraging" wardens to fulfill any of their duties. "They should be subject to the commissioner's orders," Randall said. "The great defect in the present system is that local wardens are not responsible to anybody except public opinion, which in most towns is not sufficiently informed and vocal to demand results."

An analysis of Maine's prospects for obtaining a centralized fire control program based on interviews with scores of representative Maine citizens shows, first of all, that a majority of Maine people favor such a program. Not one individual was found who came out flatly against some type of centralized control. But whether the Maine Forest Service heads up such a program appears to depend in large measure on whether the service shuns "halfway measures," as some put it, or pushes a program that is as bold as the traffic will bear. No outsider is in a position to state just how far such a program should go from the standpoint of acceptance by the Maine public. Apparently, the public is ready to go a long way if there is strong leadership.

As the owner of one tourist camp put it, "All that is needed is somebody to carry the ball. Maine's largest sources of income, the tourist business and the lumber business, can't afford to take many more jolts like the hurricane and the fire. What I can't understand is why they have waited so long to start a good program."

For Distinguished Service . . .

(*From page* 506)

The American Forestry Association for the grand work it has been doing for nearly three-quarters of a century, and for the leadership it has given the nation in this great work of conservation.

"Personally, I want to thank you for the honor you have done me, and for the tribute you have paid the 'typical prairie state' of Kansas.

"And may I also express my appreciation, President Rosecrans, for the kind words you said about me. I wish I could feel that I deserve all of them. I assure you I shall try to be worthy of them in the years I have left to do what I can to conserve our land, water and forests—and thereby aid mightily in the real objective—conservation of the people of the United States, materially, mentally, and spiritually."

AFA Elects Honorary Members

(*From page* 507)

the nation through the 4-H Clubs, the Boy Scouts of America, and the Capper Foundation for Crippled children."

Mr. Wallace, editor of the Louisville *Times*, who in 1927 served as president of the Southern Lumber Congress and in 1946 as president of the Izaak Walton League of America, was cited as "one of the earliest, most consistent and most effective advocates of the adoption of sound national and local policies for the management of our forest, soil and water resources." In 1945 he was awarded a gold medal from Columbia University for promoting good relations between the United States and Latin America.

Mr. Darling, familiar to newspaper readers as "Ding," and who stepped from his drawing board to become chief of the old U. S. Biological Survey, forerunner of the present Fish and Wildlife Service of the Department of the Interior, was cited by the Board because, by his cartoons and public service, "he has effectively impressed on the people of the country the urgent need for the wise conservation of our wildlife, forests and other natural resources.

Mr. Goodman, an engineer turned forester, was cited for "pioneering in demonstrating on his own lands the feasibility of sound forest management by private owners with intensive and integrated utilization as the resulting products."

Chinese Chestnuts

(*From page* 491)

charge of the nut crop research of the Department, puts it, "You can't have a dual purpose tree."

Certain Chinese chestnut lines possess characteristics which make them superior to native chestnuts as orchard trees. Of the several species of chestnut grown for their edible nuts, only oriental species, chiefly Chinese and Japanese, have shown themselves resistant to blight, and the Japanese species bears a nut which to many tastes is unpalatable.

But the Chinese species, *Castanea mollisima*, bears a nut which is not only delicious, raw or cooked, but averages from *two* to *four* times or more the size of our native nuts. The tree in the open does not attain the height of the American tree, but becomes about the size and general shape of the apple, although it may be more upright. Most of the heavy fruiting types have round low heads. The wood is similar to that of the American species but it also contains the specific capacity to resist the growth of the blight fungus. Few Chinese chestnut trees which are well cared for succumb to blight even in regions where the proximity of woodland chestnuts increases the danger of blight infection.

Although importations of oriental chestnuts have been coming to this country for almost 100 years, and the Chinese species since the beginning of this century, there has been a tendency to treat these foreign trees with the same casual concern our native trees received—much to our eventual dismay. Trial and error have shown us that oriental chestnuts require simple but definite care.

When the Chinese trees, seedlings or grafted varieties, are ordered for spring planting, as is advisable, they should not be planted indiscriminately in poor, undrained, or excessively acid or alkaline soils. Though the trees will grow on a variety of soils, they thrive on a deep, fertile, moist, sandy, gravelly or stony loam type of soil. The native chestnut was more winter-hardy than the Chinese chestnut, but inasmuch as the Chinese chestnut will grow on a more alkaline soil than the former, its range extends toward the coast and southward rather than northward and in more mountainous regions. The oriental chestnuts so far tested seem to do best from New York south to Georgia, and from the Atlantic to the Mississippi with a bulge across to Oklahoma. Farther south than Georgia chestnut culture is impractical as a mold develops in the nuts, and as far north as Canada the trees are not vigorous.

Because the buds and flowers of the Chinese tree are subject to frost injury, planting on slopes or gently rolling land which insures air drainage is recommended. In general, any site suitable for peaches or apples is suggested for Chinese chestnuts.

Though some trees have been

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placed in orchards as close as twenty-five feet apart, crowding will result in low yields. Forty to forty-five feet apart is more desirable.

As young seedlings are unable to cope with rival vegetation, during spring and early summer the trees should be cultivated and weeds kept under control. In midsummer cultivation may be stopped and a cover crop sown. When the trees are established and about two weeks before growth starts in spring, for each year of the tree's growth one or two pounds of fertilizer with an analysis of 6-8-6 should be applied.

Enough pruning to train the tree to a single trunk with a low head, but high enough to cultivate, is all that is necessary. If the tree goes unpruned it may form a bush. Excessive pruning will stimulate vegetative growth and delay fruiting.

Japanese beetles which often feed on the flowers and leaves may be controlled by spraying with DDT.

Two species of weevils often causing the nuts to be wormy at or after harvest may also be controlled with DDT. The Bureau of Entomology and Plant Quarantine suggests using four pounds of wettable powder containing fifty percent DDT, or eight pounds of one containing twenty-five percent DDT in 100 gallons of water. Three applications may be made, the first thirty days before the first nut is ready to fall, and the second and third applications following at intervals of twelve days.

Planting in a chicken yard or prompt removal of the nuts from the ground will make spraying with DDT unnecessary. With small plantings, this should be the simplest means of control.

If weevils are present in the nuts they may be killed by hot water treatment. The nuts are immersed in a container of water held accurately at a temperature of 120 degrees F. for thirty to forty-five minutes, depending on the size of the nuts. Or the nuts may be fumigated with one ounce of methyl bromide per twenty-five cubic feet in a tight container for four hours. As the fumes of methyl bromide are poisonous when inhaled and have no warning odor, the chemical should be handled with great care.

Oriental chestnuts are highly resistant to the chestnut blight and also to root rot, a disease which destroyed many of our native chestnuts in the South. However, the orientals are by no means completely immune to blight. If infection occurs, it is advisable to prune out the infected area and paint the exposed bark with pine tar.

As Dr. McKay's work has shown, the chestnut tree will set very little fruit unless cross pollination has taken place. In ordering trees, therefore, it is necessary to obtain two or more varieties, if grafted trees are used. There has been some debate in regard to the stability of grafted trees due largely to the poor showing of the variety Carr. In many grafts of this variety the union tends to fault in from one to ten years after planting, but results so far show that other varieties form good unions when worked on pure Chinese stock. If seedlings are planted definite thought ought to be given to replacement by grafted trees as progress in developing better chestnuts goes on. Chinese seedling trees of certain plantings have shown, however, remarkably consistent progeny. Of course, as with all seedling stock, some duds may be expected. On the other hand, future improvement is only to be expected from the potential new varieties of seedling stock.

A few of the nursery catalogs picture young seedlings bearing nuts at two to three years of age. This is typical advertising optimism, and though small crops may occur at an early age, the more usual harvest will occur at about six years, but yield will increase as the trees become older. The age of good bearing is not fixed. Trees forty and fifty years old in China are still producing nuts. E. Sam Hemming of the Eastern Shore Nurseries near Easton, Maryland, has kept accurate account of the harvests from eighteen trees planted in 1930. At seven years of age the total crop from the trees was 118 pounds of nuts, or a little over six pounds of nuts a tree. There was a gradual increase, varied in some years by unusual weather conditions, to a total of 1,100 pounds of nuts in

True conservation of our forests is proper growth, proper use. A crop is grown, a crop is taken. But the wealth of the woods remains. Roy K. Ferguson

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It's not primeval. Such a forest is as carefully tended as a well run business—which it actually *is*. Or a well run home—which it is, too. The creatures who live in it will be part of the woodland's fascination for your grandson, when he and his friends camp and hike and fish there. But Nature, though lavish is destructive—unchecked. It takes planning and managing to make sure our forests are dedicated to the greatest good of the greatest number of people.

St. Regis, with over 1,800,000 acres of timberland, has an ever growing sense of stewardship—as if these living things were lent, not owned. Our goal is intelligent *use* of our forests—growing and cutting and growing again—for that ideal yet attainable balance of *sustained yield*.

So, for generations to come, millions of people the country over may have better, fuller lives, through the use of paper and paper products made from trees. And at the same time may have the wonder and the beauty and the riches of the woods themselves.

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1946, or about sixty-one pounds of nuts a tree at sixteen years of age. Farther south it is claimed the Chinese chestnut bears even more heavily.

In the vicinity of Washington, D. C., the nuts ripen in September, though there may be some variation among individual trees. The chestnut is a perishable crop and nuts should be gathered promptly and spread away from sunlight in a cool well-ventilated place to cure for several days. Care must be taken not to let the nuts become too dry; and yet, if a large quantity of green nuts is put together, the nuts will heat up and spoil.

After curing, the nuts can be placed in friction-top (slit-top) cans and no packing material such as moss or sawdust is necessary. For the first month or six weeks the lids should not be fitted tightly to the cans as some moisture may be expected to be released by the nuts. But after that the lids may be fitted tightly and the cans stored at temperatures of thirty-two to thirty-six degrees F. At ordinary temperatures chestnuts should not be held in air-tight containers under any storage conditions.

Another method of holding nuts for spring planting is to layer them in sand in a box and then bury the box in the ground, putting a fine screen wire around the box to prevent mice or other rodents from supplementing their diet.

The most suitable container for shipping chestnuts is a heavy cloth bag. Grain bags or burlap bags may be used, but unless the bags are new they should be used double. Other containers are not recommended because they do not allow sufficient circulation of air around the nuts.

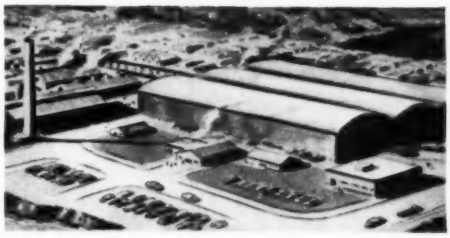
Whether or not a chestnut industry is in the making in this country is a matter for speculation. Certainly, at present high prices the outlook is good, but in previous years chestnuts have sold wholesale for as little as ten to twenty cents a pound. Even under low prices Dr. Crane believes chestnut culture would hold its own with other orchard crops. There is no doubt at all, however, that the Chinese chestnut is a desirable nut tree on a farm or home garden. With very little care it will produce nuts for the family in only a few years, and it is high time, some people think, that the generation now growing up should know a chestnut when they see one. In Tennessee a woman sold chestnuts in the bur last fall so that children could see "where chestnuts come from!"

THIS SIGN, at the entrance of the new Weyerhaeuser plant at Springfield, Oregon, tells of the 155,000 acre tree farm which will supply that plant's raw materials needs — *forever.*

THERE WILL *ALWAYS* BE TIMBER FOR THE NEW WEYERHAEUSER PLANT AT SPRINGFIELD, OREGON

ANOTHER LINK in the national program to assure a permanent timber supply for America is the recently dedicated Calapooya Tree Farm, tributary to Springfield, Oregon. It is one of several such tree farms, operated by Weyerhaeuser to supply its manufacturing plants with raw materials on a permanent basis.

Weyerhaeuser Timber Company initiated and has long supported the tree farm program. We believe tree farming is the one way of providing a permanent supply of timber for our industry.



In tree farming the mature timber is harvested by methods which assure a new crop of young trees. Adequate fire detection and fire fighting crews and equipment are maintained to protect the growing crop.

Primary objective of the Calapooya tree farm is to provide a never-ending timber supply for this company's integrated manufacturing center at Springfield. Plant facilities will consist of a sawmill, dry kilns, a planing mill, a sulphate pulp mill and container board plant and related logging operations. These mills will comprise one of the community's major industries, with a year-around payroll of about 600 workers.

TO HELP INSURE A PERMANENT INDUSTRY WE-

Operate Tree Farms — to provide a never ending timber supply for our mills. The forest crop is harvested, reseeds, harvested, reseeds—in about 80-year cycles.

Diversify Our Manufacturing —in order to use all of the tree. The aim is to build manufacturing centers in each of our operating areas so that on one millsite we can make useful products from low value as well as high value material.

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WEYERHAEUSER TIMBER IS A CROP FOREST PRODUCTS

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Sky Cruiser

(*From page* 503)

Undaunted, Wood kept trying. Multiplex machines were essential to aerial mapping. With these machines aerial photographs could be expanded into accurate topographic maps, logging grades could be located and laid out in a fraction of the time required by ground methods, timber type maps could be developed for sustained-yield operations on large scale areas and non-stocked burns would show plainly.

Just as forest owners and bankers succumbed to Wood's persuasiveness so did Bausch and Lomb, who were interested in commercial use of their equipment. In some way he got a battery of six projectors.

Attractive features of Wood's proposals to most operators were his promise of speed—as much as ten times faster than old-style methods; low cost, thirty-five to forty percent of conventional mapping and surveying; and his pledge of accuracy in detail even on maps to a scale of one inch to 1,000 feet.

Contracts were executed for aerial mapping for plots as small as forty acres, but most of them ran into thousands of acres. Included in his first 500 thousand acres mapped are topographic, planimetric, contour, forest type, extensive general maps of large areas and intensive detailed maps of smaller operating sections. He is now engaged in aerial mapping a million acres of forest land from the air in Linn County, and will have aerial photographs and topographic maps available to any purchaser for any district in the county for over-the-counter sale. This is a speculative venture, which shows the daring imagination of the young forester, and in a few years he hopes to have such data available in his files on the entire West.

Biggest break for Wood came when Long-Bell Lumber Company needed immediate, dependable maps of their 163,000-acre sustained-yield unit at Vaughn, Oregon. They had purchased the holdings from Snellstrom Lumber Company two years before, but in order to lay out intelligently a long-term operating program, they needed an overall map of all their holdings. Roy Gibson, general superintendent at Vaughn, knew it would require five years to do the job on the ground, and trained men were scarce.

Top officials of Long-Bell decided to go along with Gibson's recommendation that Wood be given a chance.

Five months later Wood laid finished maps of 150 thousand acres on Gibson's desk. He had taken one-tenth the time required for the same job under old methods. Bad weather held up photographic work on one flight strip—and weather is a problem, for there are only about eighty days a year of good flying weather for aerial photography in the Douglasfir region.

"At an expense far less than any reasonable kind of map could have been made by former ground methods," Superintendent Roy Gibson pointed out, "we got a topographic map, a general type map and aerial photographic prints of an area of approximately 150 thousand acres. While this map is not large scale showing extensive detail of topography (being one inch to 1,000 feet) it has proved out, from what checks we have had time to make, to be accurate within its expected limits.

"We are well pleased with it and consider it an excellent investment. On a long time sustained-yield operation such as this, it is absolutely essential that there be at hand a good map showing topography and timber types, and covering the entire area involved. By aerial mapping we achieved this quickly and well. By old ground methods, it would have been next to impossible under present conditions to have done so within a reasonable time; and I doubt that it would have been as good for the purpose, and the expense would have been greatly more.

"With what we now have, we are able to make dependable development plans for our entire area."

Superintendent Gibson called attention also to flexibility of aerial mapping. "To help reduce chances of error and to lighten field work on intensive location and design, we are able to get, as needed, large scale maps (one inch to 400 feet) showing more detail. These maps are not a separate mapping project but are made up from the same base data and photos as were used in making up the small scale maps. Only drafting room work using the Multiplex machine is involved. The cost of these large scale maps, plus the cost of the small scale and photos, is still much less than the cost of a map made by ground methods."

Wood has made Multiplex photogrametric maps for some of the largest and most particular forest-owning companies of the West. Proof of the acceptance of Multiplex maps as standard is best shown by additional mapping contracts from such firms as Crown Zellerbach Corporation, which owns large forests areas in Oregon and Washington. Wood has mapped from the air something over 10,000 acres for Crown Zellerbach and has a backlog of photogrametic mapping contracts for this company.

Ed Stamm, Crown's logging manager, and one of the outstanding forest engineers of the West, is a strong advocate of Ken Wood's Multiplex methods. Stamm has used aerial photos since 1927, but without the advantages obtained from the superstereoscope Multiplex.

"Wood has made three types of maps for us," Stamm said, "and they are highly satisfactory, inexpensive, accurate and very flexible. His type maps are so complete that we can get a close estimate of our reproduction, second growth, old growth and even our hardwood stands.

"His planimetric maps, taken from the same set of photos, and equivalent to sketch maps, give us stream locations and road outlines. From this set we can make our fire plans and protection layouts.

"He has also made contour maps which are accurate enough for us to locate truck roads and spot our settings. Type, planimetric and contour maps are all made from the same set of photos."

Herbert A. Templeton, president of the Valsetz Lumber Company, is an-

other booster for the Ken Wood aerial mapping system. Wood has made up topographic maps from aerial photos on about 12,000 acres of Templeton's holdings. The topographic maps have proved so satisfactory and accurate that Templeton now plans to have the young forest engineer make complete forest type maps of all his company's lands. These maps will show not only the standing timber, but will cover the cutover lands and will give an excellent picture of all the reproduction in growing forests. Templeton believes he will be able with these complete aerial maps to evolve sound management plans on his entire holdings in that section.

How does Multiplex photogrametric mapping differ from old style methods? Here's a step-by-step outline:

All available maps and engineering data of the area to be mapped are first studied. Ground controls are next established with known elevations marked and flight lines are laid out for the plane. Next step is picture taking from the air. Precision accuracy is a must.

Pacific Aerial Surveys, of Seattle, does most of the aerial photography, developing and making up of aerial mosaics (fitting pictures together). A six-inch focal length precision aerial mapping camera, calibrated by the U. S. Bureau of Standards, is mounted in the floor of a Cesna 165 plane or a 450 Wasp Stinson. The plane flies at about 120 miles an hour and must keep at same elevation on a given flight strip. If large scale maps of one inch to 100 feet are required, the plane maintains a height above mean terrain of approximately 1,500 feet, but will go up to 15,000 feet for small scale mapping of one inch to 1,000 feet. A pilot and photographer comprise the crew.

The photographer is a busy man for he must take pictures fast enough to get a sixty percent overlap on every consecutive picture on a flight across an area. Subsequent parallel flight strips must sidelap thirty-five percent. This enables accurate matching of photographs and permits later use of the stereoscope. Forty acres, or ten square miles, can be photographed in a single pass. Usual area worked at one time is a full township of thirty-six square miles.

Aerial photography completed, Ken Wood's fourteen-man staff takes over. Photographs are first checked for correct sidelap and overlap, for tilt of plane, for accuracy, for clarity of pictures to determine if a re-take is needed. Center of flight lines is checked with established ground controls.

Ground crews then take to the field. Armed with the approved photographs, they run triangulation grids, transit traverses and level lines to supplement existing ground control so all flight strips can be controlled for elevation and horizontal position.

With the aid of the field notes the work reverts to office computation and plotting. The large photos are reduced to small (two and a half inches square) diapositive plates on transparent glass. Now comes the work with the Multiplex machine. Wood has a battery of nine of these projectors installed in his Portland headquarters. Two projectors are used at one time. A diapositive plate is inserted in one with a green filter and another plate of the same area from a slightly different position in the air with a sixty percent overlap is inserted in another projector with a red filter. The operator then puts on a pair of unusual spectacles, with one red lens and one green lens. The projectors are then focused and the two offset photos brought into exact position on a plane table. Viewed through the operator's green and red lenses the map gradually takes on three dimensions. It is the old principle of the stereoscope, just like grandmother used to have in the front parlor. But this Multiplex machine has been developed to a highly scientific and accurate degree.

What happens with this machine is that each eye of the operator actually becomes, for all practical effects a wide-angle camera lens. He is enabled to see in three dimensions. The red filter in the spectacle will not show the projection from the green Multiplex projector and the green filter eye piece does not show the red map projection. The depth comes from viewing two photos taken from different points in the air, each photo viewed with a separate eye.

To understand the simple principle, hold your finger out in front of you. Close one eye and view it. Close the other eye and your finger is seen from a different prospective. It appears to move.

Now comes the wizardry of modern science. A tracing table, in the form of a four-inch disc, equipped with a midget electric eye and held by a movable metal frame is placed on the drafting table. Directly under the electric eye is a rigidly held tracing pencil. The map image is projected on the tracing table. Known elevation points have already been

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marked on the blank white covering of the plane table. With amazing accuracy the operator then starts translating the photographs to the map. He zeros the electric eye of the tracing table to a point on the projected photograph and can then trace the exact contour of the earth at that elevation. Accuracy can be maintained on maps with a scale as large as one inch to 100 feet. Keen eyes and skill are a requisite for this detailed task.

The electric eye is called a floating mark. When viewed through the red and green eye lenses it appears exactly like a bright bird hovering in the air. When it comes to rest on the earth it is as if the bird settles down.

When the aerial photographic images are properly oriented and projected they constitute a precision scale model of the ground photographed. Wood considers the aerial photos as equivalent to a set of transit notes. His method transfers time-consuming field work to office time and calculation. A set of photos which requires twenty-four seconds to take would require the time of two men for twenty-five days in the field. Two men in the field and two men in the office, using the aerial photos and Multiplex machine, can completely map twenty to 1,000 acres a day, depending on map scale desired.

Most remarkable of the expanded possibilities perfected by Ken Wood and staff is in the field of timber type maps and timber estimating. By combining spot cruising on the ground, to determine degree of timber defect, with density aerial photographs, he can make a fairly accurate estimate of standing timber, and all cruisers are estimates at best.

Factors used in aerial timber cruising are first determined by the ground crews. They establish average height of trees, then they work out a ratio between diameter of the tree butt and diameter of the crown, which are fairly consistent. Applying these data to a density photograph will produce a gross estimate of cubic volume of a stand, but not a net volume, for, of course, defect may vary. Neither is it possible to give an accurate estimate of species content, although cedar, Noble fire and hardwoods are easily distinguishable. Similarity between Douglasfir and West Coast hemlock, when viewed from the air, poses a problem, which Wood may yet lick. Because of the amazing clarity and faithfulness of aerial photos, ground sampling of stands may be reduced to a minimum. Sustained-yield operators who require complete data on timber types and volume for extended areas in establishing cutting budgets are turning to Wood for this information.

Kendall Wood is constantly experimenting to develop still wider uses for these magic strips of photogrametric celluloid. He says the greatest advantage in use of Multiplex maps is that you know where you're going. From a young man who gives every evidence of knowing where he's going, this observation takes on considerable significance.

Progress Through Cooperation

(*From page* 500)

fire protection is the biggest forestry problem in Tennessee today. He outlined a proposed forestry program for the state, which would include demonstration forests to educate landowners in forest management. He expressed the opinion that greater state aid should be given to woodland owners in protecting their timber and expressed the conviction that growing timber should be free of taxation like other growing crops.

C. E. Brehm, president of the University of Tennessee, advocated coordinated land use programs as vital to the economy not only of the state but to the nation as a whole.

The principal resolution adopted by the conference called for an increase in Clarke-McNary Act funds to provide for federal participation to the extent of fifty percent of the total cost of adequate fire control on state and private forest lands; that funds under the same act be increased to meet mounting needs for the production and distribution of tree seedlings for reforestation purposes.

Highlights of the field trips included a woodland management-utilization demonstration near Trenton, Georgia; a visit to Chickamauga Dam, a multi-purpose project constructed and operated by the TVA as a part of the unified development of the Tennessee River system; forest management demonstration on the 17,000-acre Horseshoe Properties owned by Cartter Patten of Chattanooga; inspection of famous Copper Basin, where erosion has denuded 13,000 acres; and an overnight visit to Fontana Dam in North Carolina, with a trip to the Joyce Kilmer Memorial Forest in the Nantahala National Forest.

THE AMERICAN FORESTRY ASSOCIATION

919 SEVENTEENTH STREET, N.W., WASHINGTON 6, D. C.

The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members a half century ago, the Association has attained a substantial membership of many thousand men and women, living in every state of the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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